AMERICAN BEE JOURNAL

Vol. LXVII—No. 2 Hamilton, Illinois, February, 1927 Monthly, $1.50 a Year

Large Scale Co-operation

By O. A. Fitzgerald

FOR the first time in the history of the honey producing industry of the West, all states in the intermountain group are favorable to the formation of a big cooperative marketing association, to take advantage of facilities offered by the federal government through the intermediate credit banks for storing honey and regulating the flow to market in a way that will stabilize the price to the producer at a fair level throughout the year. Just when or how this intermountain association will make its formal entrance is a matter of conjecture, but all it needs is an impetus and a little sound leadership. This development, supplemented by the coming to the intermountain West of a bee culture laboratory of the Department of Agriculture, situated at Laramie, Wyo., and assigned the task of studying beekeeping problems peculiar to the intermountain region, gives the future of the industry in this part of the country a friendly glow.

Rise in the cooperative marketing sentiment, traces in no small degree to a series of uncontrollable circumstances making themselves felt most strikingly this season. At the start of the 1926 season there was a supply of carry-over honey from 1925. It was not large, however, and in face of a low 1926 production made the available supply not far from normal. Yet the early selling proclivities of many gave it the appearance of a big supply. If one wants to be cruel, one can call this an instance of "dumping," but it should be recognized that many were compelled to sell when they did, in order to turn the money to others. The result, however, was that during the 1926 season, despite the lowered production, honey sold on an average of about 2 cents a pounds less than for 1925.

There has been observed in recent years a steady rise in the small-lot system of buying. It is noted in many other lines of agricultural activity. In wool circles it is called "hand-to-mouth" buying. Instead of placing orders for large lots, buyers try to show as good a cash position and as small stocks as possible. This will be beneficial to the producer when he organizes cooperatively. Hand-to-mouth buying makes speculation less attractive and theoretically should make the year-around price more stable.

With the honey trade firm in its position of buying in small quantities, any tendency toward dumping aggravates the condition. The states now contemplating organization see this very plainly. It is beyond the power of the individual state or district selling agencies to cope with the situation. At the annual convention of the Utah State Beekeepers' Association, a manager of a well known intermountain cooperative admitted this openly. He said the cooperatives now operating have reached the limit of their effectiveness. Further progress in honey marketing must look to group action.

Many efforts have been made in the past to bring together into a unit the white-honey producing states of the West. Colorado is generally credited with having started the ball rolling. At the time Colorado saw the desirability of all whose bees graze on alfalfa and sweet clover fields organizing under one banner few others saw the situation in the same light. The Western Colorado Honey Exchange, a cooperative, which handled this year thirty carloads of honey, with a shipping point value of $100,000, realized it could not master the situation alone.

Success of cooperative marketing in other lines, interest in the movement from the federal government, and a general feeling that something must be done, have made the present appear the time for action. Practically every state beekeepers' association in the intermountain region, Colorado, Wyoming, Utah, Idaho, Montana, Nevada, eastern Oregon and eastern Washington, have indicated a friendliness to the marketing plan. Idaho perhaps has gone further than any other state and has worked out a definite program. Regardless of whether an intermountain association is formed, Idaho is going ahead with a state cooperative to see if orderly marketing of honey is not a possibility. Montana and Wyoming have asked the Bureau of Agricultural Economics of the Department of Agriculture to assist in working out a plan for a state marketing association.

These various states will meet at Laramie, Wyoming, site of the new intermountain bee culture laboratory of the Department of Agriculture, sometime early in February. At that time state representatives will consider a program whereby the activities of all state associations can be unified. The real meat of the Laramie meeting will come in discussion of the six-state marketing program. The government, through its recently created Bureau of Cooperative Marketing, has announced its intention to study honey markets, long-time demands and prices, what territories may be regarded as supply sources for particular markets, and the possibility of increasing the per capita consumption. A. W. McKay, cooperative marketing specialist with the department, visited beekeepers' conventions this winter and discussed at each the cooperative trend.

Production of honey has been increasing steadily, but market demands have been slipping. The per

capita consumption of honey is far too low for the high quality product. The per capita consumption in the western states is about six pounds. If that figure could be reached throughout the United States the beekeepers would be happy. The extent of growth of the honey producing industry in the intermountain region is indicated in a comparison of the present number of colonies with those of 1920. Idaho has approximately 75,000 colonies of bees, compared with 35,000 in 1920; Utah has 60,000, compared with 23,000 in 1920; Montana, 30,000, against 12,000; Wyoming, 30,000, against 14,000; and Colorado 100,000, against 63,000.

In years of surplus production the individual growers and small cooperatives are unable to finance storing their honey until the distressed market condition eases. The intermountain producers also have the idea that they suffer because of their distance from markets. The opinion was reflected at several conventions this year that, eastern growers being nearer the markets, they sell first. In this connection there is noted rising interest in any program that will advertise honey, build sales and increase the demand. Intermountain producers are contemplating doing propaganda work of this nature in their own home communities.

A survey of the several states shows the following situation:

Idaho—Idaho beekeepers will pool their honey crop. A tentative plan of organization, including articles of incorporation and by-laws, has been submitted to a committee of fifteen beekeepers. A. W. B. Kjosness, State Commissioner of Agriculture, is helping the honey producers work out a cooperative marketing plan.

Montana—A committee of three is working on a state marketing plan, counselling with the Federal Department of Agriculture. One of the three will represent Montana at the Laramie conference. Montana feels a state marketing unit should precede an intermountain organization.

Washington—A western Washington association now operates to supply the Seattle and northwest markets. It is thought, however, that eastern Washington growers, as well as those in eastern Oregon, would be favorable to affiliation with the intermountain honey producers.

Colorado—This state has at several times sought to arouse interest in cooperative bargaining in honey. The Western Colorado Honey Exchange sought to get other cooperatives to affiliate as the nucleus.

Utah—The Utah State Beekeepers' Association voted unanimously in favor of the cooperative marketing idea. Utah will be represented at Laramie.

Wyoming—Wyoming will be heard from at the Laramie conference. It is understood, however, that Wyoming honey producers want the intermountain cooperative. They have asked the government market specialists for suggestions on a state unit.

The Intermountain Bee Culture Laboratory will serve beekeepers in five states: Wyoming, Montana, Colorado, Utah, and Idaho. It has been in operation but a trifle more than a month. With an annual appropriation of $10,000, it will study problems which are found only in these states. In charge of the station are two of the leading bee specialists with the department. Dr. A. P. Sturtevant, who has been with the Washington laboratory ten years, will have charge, with J. E. Eckert, another experienced apiarist, as his assistant.

The bee specialists had not been on the job long before they found a problem awaiting their attention. A malady broke out in southern Utah during the summer. Bees clustered on the front of the hives and, after shaking and shivering a while, died by the hundreds. Analysis failed to show poison or trace of disease. Beekeepers now have an idea that their bees imbibed too freely of the nectar of loco weed and were "locoed." There was a big flow of loco weed nectar this year, but no one thought of gathering any for analysis. In many localities the situation was serious and honey production was cut appreciably.

There are all types of conditions available near Laramie. Bee experiments can be conducted in areas of complete isolation where little or no nectar flow is available, or in irrigated regions where blooms are plentiful. A wide range of temperature also is available. Dr. Sturtevant is pleased with the situation of the laboratory. It is hoped that the station will be able to cooperate with beekeepers and college extension services in field experiments in various parts of the five states.

Coming of the station will result in a stimulation of bee culture work on the part of agricultural colleges which in the last few years have permitted this work to slack. Wyoming and Colorado have kept up without decline their activities in behalf of the beekeepers, but Idaho and Utah colleges of agriculture have not done so well. Several states conducted vocational bee culture classes for ex-service men, but the industry has not occupied the position in the college program the leading producers would like it to occupy.

Our Cover Artist

Miss Louise Conradt

This smiling lady is none other than the capable artist who has been preparing the covers for the Journal which have brought so many pleasing comments. Miss Conradt is not a beekeeper, but perhaps — some day. Who can tell?

Feeding for Comb Honey for Profit

By Arthur Allen

At the meeting of the Heart of America Beekeepers' Association held at Lawrence Kansas, July 4, there was quite a discussion as to there being a profit in feeding sugar to bees to fill sections.

Two days later, Mr. Dadant visited us and the subject was brought up again, and he requested that we try feeding a colony and keep a record of the results, which are as follows:

On July 10 we found a colony preparing to swarm, and as it was a very populous one, I selected it for the test. An eight-frame hive with five frames and one-inch starter strips, and dummies to fill out, made up the brood nest. Two supers with full starter sheets in the sections were put on, and four Diemer & Allen quart entrance feeders used as soon as the bees would take the feed.

All the bees were shaken off the combs and the brood put on another colony to care for. The queen was young and very prolific and did not give the bees any storage room in the brood nest. Changes were made as follows:

July 12—As the bees seemed crowded, I put on a third super.

July 26—Put on fourth super.

August 2—Put on fifth super. Sixth frame in the brood nest.

August 18—Seventh frame in the brood nest.

August 29—Two hundred fifteen pounds of best grade cane sugar fed to date and five supers finished. Owing to putting on the third super too soon, the first three were twelve- and thirteen-ounce average. The other two were fifteen or sixteen-ounce average.

All were nice, white cappings and had a blend of sweet clover which was in bloom during most of the season of test. Other colonies were storing more than was needed for their own use, and this must be allowed for in that all the sugar should have gone into surplus. Very little was stored in the brood nest, and I have estimated that it would take twenty-five pounds more for them to winter properly.

From the following you will see that it is not practical to feed, and most reports of honey being sugar are caused by people not being familiar with the various flavors of honey from the different flowers:

Debit		Credit	
Sugar	$13.98	Three cases	
Sections	1.20	at 4.25	$12.75
Foundation	1.00		
Cases	2.85	Two cases	
		at 4.75	9.50
Total cost	$19.03		
Gain	3.22	Total val.	$22.25

Nothing charged for the labor of feeding. Missouri.

(As the above test was made while the bees were harvesting honey in the field most of the time, it is quite evident that the outcome would have been a loss in value, instead of a light gain, in time of scarcity. But in the matter of weight, the result fully justifies our view that the returns of sugar fed to bees will usually be less than half. Two hundred and fifteen pounds of best sugar was fed and the weight of the harvested material is less than 100 pounds. Evidently the balance was used up in comb building and in breeding. If no harvest had been in progress, the resulting crop would very probably be less than a third in weight.—Editor.)

The Washington Program

B. A. Slocum writes us that the Washington beekeepers are undertaking a big program for the near future. They will ask the legislature for an increase in appropriation from $2,000 to $4,000 for inspection, will ask to have the law changed to prevent moving of bees without permission of the inspector, will ask to have the state or county where honey is produced shown on the label, and ask for a registration law with a fee of 50 cents.

The previous goal set for the state has been attained. They set out to reduce the percentage of disease from 40 to 10 per cent and have reduced it to less than 4. The number of box hives is below the figure set, being less than 5 per cent. More than ten thousand queens have been used to replace poor ones. There are now eleven associations in the state, thirteen boys' and girls' clubs with a membership of seventy-nine, and an annual honey week is held. The associations pool their orders for supplies and sell their wax in similar manner.

An annual essay contest is held for eighth grade and high school students on the subject "Honey as a Food," which is designed to increase interest in the use of their product. Radio talks on honey, exhibits at fairs and other means of promotion are used.

Jamaica Honey Exports, 1926

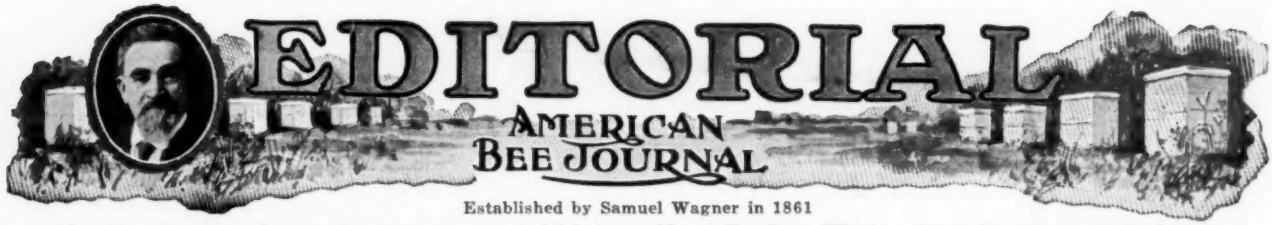
Exports of honey from Jamaica from January to May, 1926, amounted to 46,185 gallons, as compared with 74,735 gallons for the same period of 1925. Prices for Jamaican honey ranged from 48 to 73 cents per gallon, according to quality.—Consul Jose de Olivares, Kingston, Jamaica, August 22, 1926.

A Beekeepers Home

The beauty of this home cannot be shown in black and white. It is of bright red brick, with white stucco finish, red Spanish tile roof, Spanish colonial design. Beautiful indeed.

And inside. Seven-foot log fireplace of Tiffany enameled brick. Trimmings in two-tone black walnut; French doors; magnesite floor in kitchen; breakfast nook to add delight. Bathrooms, closets, bedrooms, fitted to the queen's taste.

This is "White Lawn," the home of Edward A. Winkler, at Joliet, Ill. He writes: ''No, my bees did not build this home for me, but they went a long ways, and traveled a good many miles to help pay for it." (Winkler has 700-800 colonies.)



Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language. Published monthly at Hamilton, Illinois. Copyright 1927 by C. P. Dadant.

Entered as second-class matter at the Postoffice at Hamilton, Illinois.
C. P. Dadant, Editor; Frank C. Pellett, Associate Editor.
Maurice G. Dadant, Business Manager.

SUBSCRIPTION RATES:

In the United States, Canada and Mexico, $1.50 per year; three years $3.00. Other foreign countries, postage 25 cents extra per year. All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

Keep the Bees Warm In Spring

There is considerable neglect on the part of careless beekeepers in maintaining the heat which the bees produce. In the Middle States, the bees begin breeding as early as the warm days of February, provided they have honey and pollen. Some people hold that they will not breed, if they are comfortable, until spring opens well. But I know better, for I have often found brood in all stages, in strong colonies, by the end of February.

It is therefore quite important that the bees should be protected, fully as much, in spring as in winter. For this reason I deprecate the use of a second story, or food chamber, until the warm days come, for there is much loss of heat in such an addition to the main brood chamber. Similarly, if we feed the bees, the method of feeding must have consideration for the warmth of the cluster and must not allow of a current of air passing through the feeding arrangement. Until the breeding season is well advanced, the giving of liquid food always causes more or less danger of such a current of air. So, I have repeatedly used sugar candy, laid right over the cluster. As a matter of course, such feeding should not be necessary, for the bees should be amply supplied in the fall; but we do not always do what we know should be done and we are also sometimes deceived as to the amount of food the bees will consume.

Let us not figure that the colony has no longer any need of protection when a few warm days come. Let us, on the contrary, see to it that the best of protection is maintained, so that no heat will be lost. My most successful rearing of early bees was where the colonies had been placed in a greenhouse, ranged along the south wall, with their entrances on the outside. Never did we have such strong colonies, early in the season, and the result showed itself in the yield of nectar.

If the colonies have been amply provided for, early in the previous fall; if they have ample pollen and honey in their breeding combs, they will breed early and the colony will have a strong force out at fruit blooming time, provided the colony is sheltered against changeable weather.

We are told that artificial pollen will not do; that it is not good food and that the larvæ fed upon it die. Our own experience would lead us to believe that there is some other trouble than artificial pollen, to cause larvæ to die. If we refer to past experiences, we find that some others see the matter as we do. For instance, in the third volume of the American Bee Journal, page 173, there is a report of A. I. Root, over the signature of "Novice," explaining how he fed about three pecks of oatmeal, out in the open, in spring, and that the colony that took the most of this artificial pollen "excelled all the rest" and "produced 117 pounds of box honey."

But the matter of feeding artificial pollen is of secondary importance, because there are only a few days, and not every year, when this may be done, the pollen of the soft maples usually coming early enough to take the place of the used-up supply of the previous fall.

By the way, we often have enquiries as to how one can get rid of pollen stored in combs, by queenless stocks, in the fall. If those combs are kept dry, there is no difficulty in getting strong colonies to use up the pollen. It is only in cases where the combs have been neglected and allowed to become mouldy that the pollen becomes worthless and cannot be used by the bees.

But above all things, do not fail to keep your colonies well sheltered, on such combs as they can well cover, in early spring, if you wish to have strong colonies for summer.

Why Can We Not Sell More Honey?

It seems as if, with all our urging of honey consumption, but little of it is used, even by the beekeepers themselves, in a country where they eat somewhere about 110 pounds of sugar per year. Why is it?

Very few native Americans will eat a piece of bread without having it previously spread over with butter. They appear to consider it impossible to eat bread without butter. Yet, bread spread over with honey appears incongruous to many. It must be a matter of simple education, for both are natural products, both are good, both are healthy, both contain those famous vitamines which are said to be the nourishing substances in food.

We preach towards the use of honey in cooking. That is all right, and honey is good in many kitchen preparations. But cooking takes away a part of those qualities which make honey so far superior to our chemically made sugars and many of the finest essential oils which give it the fine flavor of the flowers from which it came. And then they tell us, as did James Heddon years ago, that honey is **only fit for sauce.**

Sauce indeed! This illustrates how few people have ever noticed the delicious flavor of honey as it was harvested by the bees, eaten on bread, cakes, biscuits, or waffles, unspoiled by being mixed with all sorts of other foods. Europeans certainly know better than we do how to eat honey and enjoy its fine flavor. That is why they want it granulated and do not wish to have it heated to prevent granulation.

Let us train our young generations to eat honey "au naturel," spread on bread or hot cakes, just as we eat butter. America should consume at least ten per cent of her sweets in the shape of honey, for greater health. When this happens, we will consume a billion pounds of honey in the United States, each year, and honey will be in great demand everywhere.

Leading Honey-Producing States

An article in this number, by Don B. Whelan, of the Department of Entomology of the University of Nebraska, gives us an example of the change in the proportion of honey in the different states of the Union. It is to be remembered that much of this change is due to the increase in population in the states of the West. If the reader will refer to page 224 of May, 1925, he will find there that, in 1884, we sold 5,000 pounds of extracted honey to a friend in northern Wyoming, and that this honey was all sold to the cowboys and the Indians. At that time there was probably not a single beekeeper in the entire state of Wyoming. Now Wyoming is the producer of a big crop of honey. In a few years this same state may be sufficiently settled by the white man to consume most of its honey production. We are in a new country still and have not yet fully realized its possibilities.

Color or Flavor—Which?

In the "Dixie Beekeeper" for December, 1926, Mr. J. J. Wilder, who is one of the largest producers of honey, protests against the custom of grading honey by color. He says very truly that "what counts is the flavor, first of all." He is entirely correct, and the grading of honey should be by flavor first. It will be all right to grade the same kind of honey according to color, though color is only a matter of fancy.

The trouble with the market for honey is that very few people know what good honey is. It is very much as it was in the old days about apples. I remember that, when I was a young man, some fifty years ago, at a meeting of the Warsaw Horticultural Society, which was then one of the best associations of fruit growers in Illinois, an old, experienced apple grower said: "If you plant an orchard of a hundred apple trees, plant ninety-nine Ben Davis, and one . . . Ben Davis." Now, after fifty years of experience with the Ben Davis apple, everybody realizes that the only argument in favor of the Ben Davis apple is its quality for keeping in winter and its **red color.** People like red apples, and they became accustomed to selling apples by **color;** but this is now obsolete and they sell apples by **flavor.** We will have to come to it with honey. It is well to grade certain kinds of honey by color, but we must teach the public that the quality of honey is **not all** in its color.

Apiary Registration

Those who are so enthusiastic for registration of apiaries with a license fee will be interested in the news coming out of Utah. Word has just reached this office that the Commissioner of Agriculture, who directs the bee inspection work, has recommended that the registration law and license provision be repealed to facilitate the work of his office. In practice it appears that too much time and effort is required in enforcement of this law. Merely passing a law does not make beekeepers register. It must be enforced the same as any other statute.

L. T. Floyd, Provincial Apiarist of Manitoba, recently expressed himself to the effect that the registration law was of no help in Manitoba. In another Canadian province the man in charge recently told the writer that they were making no attempt to enforce the registration provision.

Answering Questions. A Compensation

If it is not always pleasant to answer questions, there are some unexpected compensations. For Christmas, the editor received a very pretty photograph of a gull flying over a rough sea, with the following mention on the back:

"A silent messenger who comes, from afar, with Christmas greetings and good wishes, to one who patiently answers many foolish questions. H. B., California."

Many thanks. Such a message makes up for many foolish questions. Ready to answer more to the best of our ability.

A Bee Book In Arabic

There has recently come to hand a book in Arabic characters which no member of the staff of the American Bee Journal can read. It is "How to Raise Bees in Egypt," by Dr. Abushady, former editor of the Bee World, who is now in Egypt. It is published by Mohammed Abd-el-kfoor at Cairo. There are in the American Bee Journal library, books on bees in many languages and from many countries.

Half-Story Supers

This is probably a good time to speak of apiary equipment, for the beekeeper who wishes to succeed does not wait till summer is on him to prepare his hives and supers.

If you use full story, ten-frame hives, for extracted honey, you may deprecate half-story supers. Yet, they have a great many good points, especially with the deep-frame hive. If they are used only for storing honey, the frames in them may be placed 1¾ to 2 inches apart, so that the combs may be built out deep enough to prevent the queen from laying eggs in them and to contain more honey than thin combs contain. It is true that, if the queen insists on laying eggs in the super, the bees will shorten some of the cells for her benefit. But if the brood story is ample for her laying, with deep combs in which she can make a circle of brood much larger than the circle she could make in the super, she will be much less apt to go into it. One may use a queen excluder, but I have never believed in those excluders, because they interfere with ventilation and the easy access of the bees to the supers. To me, the ideal condition is, a large hive body and a number of shallow supers, to be raised or exchanged for one another in order to meet the conditions of the harvest. The queen excluder is more necessary with the Langstroth than with the deeper comb.

Another advantage of the shallow super is that it does not increase the space for surplus in an excessive way. When the crop begins early in the season, cool nights are likely to cause a lessening of the temperature in the hive. A deep super will increase that tendency. A shallow super is much more readily and fully occupied by the bees. Other supers are added as needed.

Another advantage is the facility with which the honey is removed by extracting. It is much handier to extract from a six-inch comb than from a nine-inch one.

The objectors to the shallow super say that they do not wish two kinds of frames in the apiary. Yet they do not hesitate to use sections in the super, when they want comb honey. The purpose of the shallow comb must be entirely separate from that of the regular brood comb. Then there is no difficulty. If you use regular brood combs for supers, you will have some that have been used for that purpose which will find their way into the brood chamber, and those combs, if they have been built with deep cells as mentioned above, will have to be shortened by the bees for the queen to lay in them. With shallow story supers, nothing of the kind will happen.

When I speak of shallow supers, I do not indicate supers with frames less than six inches deep. There are supers made which are mere toys, with frames no deeper than honey sections. These are too shallow for anything. The super combs we use have frames with six-inch side bars and contain almost as much honey, when thick and full, as a regular Langstroth comb.

I used both full story supers and shallow supers for years, and my experience is as reported above.

Advertising Honey

One of the most enterprising of the European bee magazines, the "Gazette Apicole," devoted its entire December number to the advertising of honey and displays of divers advertising methods. Two of these are borrowed from America. One of them shows two pages from the "American Honey Producers" in "Housekeeping"; the other shows a Dodge automobile stopped in front of a country stand and the owner of the auto buying honey from the country producer. But they show also dozens of pictures of pretty girls selling honey, families and children eating honey, winged fairies carrying jars of honey, etc.

The conclusion which they reach is this: Show your honey and it will sell, for honey is the very best food in the world. It was called "the food of the gods" in the history of mythology.

Ten Leading Honey Producing States

By Don B. Whelan

A STUDY of the various census reports, put out every ten years by the Department of Commerce, reveals some interesting facts in regard to beekeeping. These reports show, among other things, how honey production has fluctuated from decade to decade and reveal how some centers of the beekeeping industry have kept up in the lead while others have been left behind by new leaders. They also show how different inventions and beekeeping practices have affected the production of honey and beeswax. It is true that the census does not register all of the honey produced in any one state, but it is probably the best basis for comparison that we have.

The census figures show that the Western States have been taking the lead in honey production, replacing some of the older beekeeping states in the East, both in the amount of honey produced per hive and the amount of honey produced for each inhabitant of the country. The Eastern States, for the most part, have shown a big decrease in honey production since 1899, while most of the Western States have increased their honey production during this time. In 1879 the Middle Atlantic States, composing New York, New Jersey and Pennsylvania, produced 14.12 per cent of the honey crop of the country. Since then their quota has steadily decreased until the last census credited them with but 8.96 per cent of the honey crop. The states of Ohio, Indiana, Illinois, Michigan and Wisconsin produced 22.23 per cent of the honey crop in 1879, but only 13.24 per cent of it in 1919. The Mountain States, Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah and Nevada, were repsonsible for just .47 per cent of the country's honey yield in 1879, but in 1919 produced 15.84 per cent of the whole crop. The three Pacific States raised their percentage from 2.78 per cent in 1879 to 14.54 per cent in 1919.

A study of some of the earlier census reports shows that the ten leading honey producing states in 1859 were, in the order named, New York, North Carolina, Kentucky, Missouri, Tennessee, Ohio, Virginia (including West Virginia), Pennsylvania, Illinois and Alabama. All of these states, with the exception of Missouri, are located east of the Mississippi river. In 1899 the states in the order of their honey production reports were: Texas, California, New York, Missouri, Illinois, Ohio, Alabama, Colorado, Virginia, and Indiana. Here we see four of the western and midwestern states listed, which shows a growing importance of these states in honey production. In 1919 the ten leading honey producing states were California, Texas, New York, Michigan, Colorado, Iowa, Wisconsin, Missouri, North Carolina, and Washington. Over half of the states reporting the largest yields of honey are located west of the Mississippi river. New York, North Carolina and Missouri alone are left of the states that were included in the high ten in 1859.

What will the next census show, and which will be the ten leading states in 1929? Will the West gain another state or two, or will the East stage a comeback? If the West does gain, what state will be added to the honor roll, and what eastern state will be left out? North Dakota has been coming to the front in honey yield and has over three years yet to go. If she increases her honey production as much in this time as she has the past six years or seven years, there will be no doubt but what she will make a great showing. I doubt if she will be among the favored few. Utah, Wyoming and Idaho will be among the western states to bid for a place, but they will find stiff opposition in such eastern states as Pennsylvania, Kentucky, West Virginia, Illinois and Tennessee. New York has been in the big ten ever since 1860 and is the only state to repeat every time. California and Texas have been there since 1890. One answer to the West's increase in the production of honey is the ever-expanding area planted to sweet clover. Alfalfa also yields nectar for honey in that region, while in the East it is of little importance. Irrigation is opening up thousands of acres of land to the farmer and to the beekeeper.

1860

State	Lbs. Honey
New York	2,369,751
North Carolina	2,055,969
Kentucky	1,768,692
Missouri	1,585,983
Tennessee	1,519,390
Ohio	1,459,601
Virginia *	1,431,591
Pennsylvania	1,402,128
Illinois	1,346,803
Alabama	1,247,233

* Including West Virginia.

1870

State	Lbs. Honey
Illinois	1,547,178
North Carolina	1,404,040
Kentucky	1,171,500
Missouri	1,156,444
Tennessee	1,039,550
New York	896,286
Iowa	853,213
Pennsylvania	769,989
Ohio	763,124
Georgia	610,877

1880

State	Lbs. Honey
Tennessee	2,130,689
New York	2,088,845
Ohio	1,626,847
North Carolina	1,591,590
Kentucky	1,500,565
Pennsylvania	1,415,093
Illinois	1,310,806
Iowa	1,310,138
Virginia	1,090,451
Georgia	1,056,034

1890

State	Lbs. Honey
Iowa	6,813,412
Illinois	4,602,941
Missouri	4,492,178
New York	4,281,964
California	3,929,889
Wisconsin	3,515,761
Texas	3,286,386
Ohio	2,894,059
Michigan	2,487,134
Pennsylvania	2,453,424

1900

State	Lbs. Honey
Texas	4,780,204
California	3,667,738
New York	3,422,497
Missouri	3,018,929
Illinois	2,961,080
Ohio	1,980,530
Alabama	1,930,410
Colorado	1,732,630
Virginia	1,708,320
Indiana	1,681,554

1910

State	Lbs. Honey
California	10,264,715
New York	3,191,733
Texas	3,093,097
Iowa	2,840,025
Wisconsin	2,676,683
Colorado	2,306,492
Tennessee	1,969,425
Illinois	1,896,996
Pennsylvania	1,840,360
Kentucky	1,604,519

1920

State	Lbs. Honey
California	5,501,738
Texas	5,041,236
New York	3,223,323
Michigan	2,507,810
Colorado	2,493,950
Iowa	2,374,080
Wisconsin	2,153,819
Missouri	2,105,815
North Carolina	1,809,127
Washington	1,596,206

Nebraska.

Keep Away From Wires

By L. H. Cobb

I had read of the killing of bees from wires overhead, and I had a row of colonies facing east less than a rod from a row of telephone poles carrying perhaps a dozen wires. I watched closely and discovered no injury, and figured the idea was bosh. Then I happened to see some bees strike a wire in their line of flight and gave the matter renewed attention. In the first instance the wires were above their line of flight, and while many bees did fly close to them above and below, it was never the swift in-or-out flight and they were looking where they went. At another time I had a colony located beside a poultry-wire fence, only a yard or two from it, and facing a large cherry tree that almost touched the fence, and with the side of the hive toward the fence. The bees flew out through the wire and returned through it more than they flew the other way around the tree, and I saw dozens of bees strike the wire on their return, and found many on the ground, either hurt or resting before trying again. That fence was clothed in a mass of green branches, which effectually closed that path, even when the leaves had dried up. It was not necessary to move the hive, but I would not locate a hive similarly again. I have watched bees and it seems to me that they take the clearest path to the open sky from the entrance and locate their regular route accordingly. I know that thousands of bees, when the pasture happened to be north, would fly out around the south side of that tree and then turn north, and in coming back would fly over the tree and come in from the south. There were several large trees in the yard north of the hive toward the front, but open space south, and yet the trees to the north were so far away they could not bother the bees save as they obstructed the view to the open sky. Any wire in their direct path as they come down from a trip will be sure to kill or injure many of them. It was evident they could not see those wires until almost against them, for many did bring up with a jerk in time, while many came through, but many struck seemingly direct without effort to miss the wire.

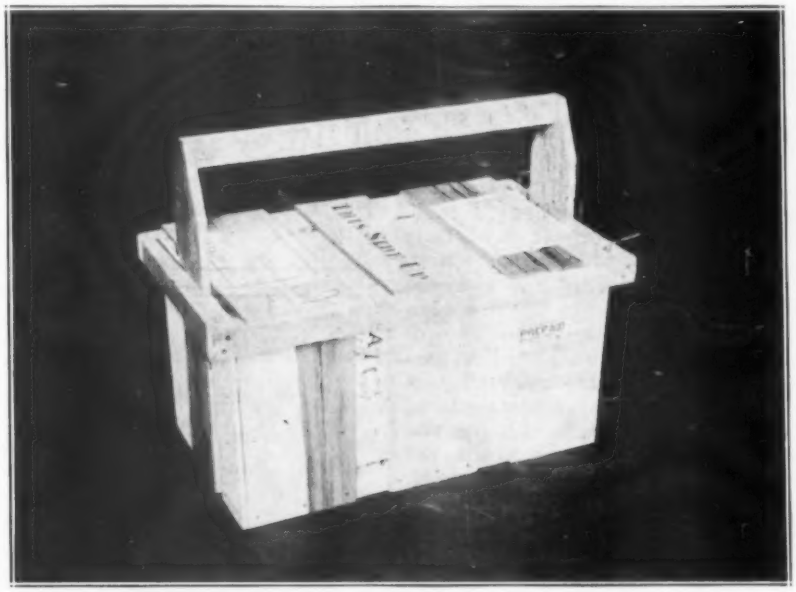
Kansas.

A Queer Clustering Spot

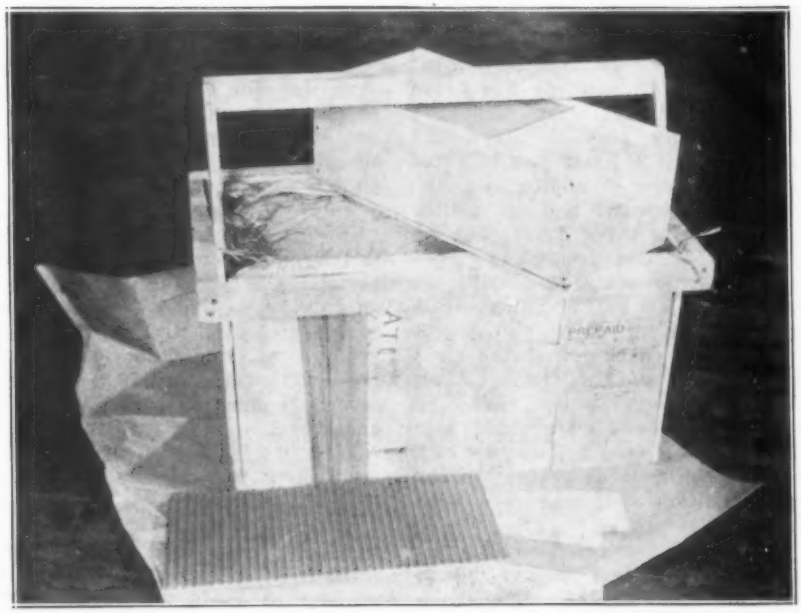
"L'Abeille et Sa Culture" of Huy, Belgium, in its October-November number, gives the photo of a swarm settled upon the bumper of a large limousine, at Liege. Bees will settle almost anywhere when they swarm.

Comb Honey by Express

SOME of our good beekeepers have trouble in getting honey safely delivered by express. Those who do should take a lesson from Mr. Orlando W. Bedell, of Earlville, N. Y. Mr. Bedell lately sent to the editor a dozen sections of the choicest comb honey by express, as a present. After the trip of nearly a thousand miles, that honey was in the most perfect condition. The crate containing it was packed into an outside crate with about six inches of straw at the bottom and about two inches on the sides and ends. The outer crate had a handle at the top, so that it could not be overturned and must necessarily remain upright. In the inner crate, the last section put in was let down with a band of white tape, so that there was no trouble in lifting it out without a pry. Everything was neat and the address plainly showed what the contents were, so that there could have been no excuse for anyone to handle the crate roughly. The honey was good enough for the President of the U. S.



Express package as it arrived



Package opened and honey carton removed

Queens 42 Days In Mailing Cages

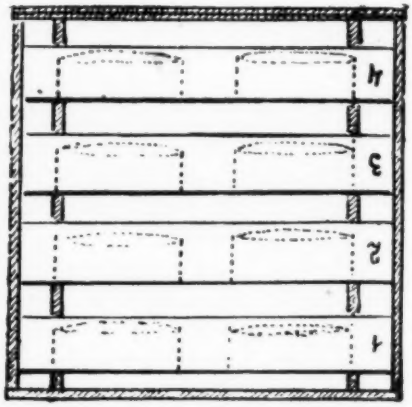
By Edward Kellner, Costa Rica

MR. W. B. GEHRELS, a commercial beekeeper in Costa Rica, wanted to try other races of bees besides his own. This was the reason why I decided to try taking with me, on my journey to Central America, some 1926 mated queens out of my yard, situated in southern Moravia, some seventy miles north of Vienna, Austria. My bees are a cross between the common black bee and Italian and Carniolan bees.

The mailing cages used were of regular size and type, with two compartments, one for queen and bees, the other for honey-sugar candy, both connected by a tunnel-like hole, the diameter of this tunnel not being more than to allow one bee to pass, as a safeguard against the eventual softening of the candy and overflowing the compartment of bees too quickly. As I intended to remain in steady touch with the bees, I could afford to have the tunnel small. Only once it happened to be obstructed by a dead bee, and this was removed before danger arose to the live bees. The cage had no opening to the outside for introduction or other purpose, to eliminate any possibility of bees getting out on account of loosening of nails, etc. Queen and bees were introduced through the food compartment and the tunnel, their own compartment having been screened before with ordinary wire screen. Bees introduced, the candy was filled into its hole, this having been well coated with hot paraffine. Above the candy came a layer of paraffined paper, and upon this a cover of galvanized sheet-iron.

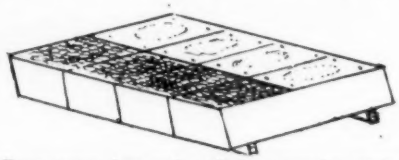
The candy was prepared in the usual manner. To two pounds of liquid ripe sainfoin honey was added fine powdered and sieved sugar in such quantity that the resulting dough got stiff. After two or three days the process of adding and stirring in was repeated and again after another two or three days. The resulting candy proved very successful, because it did not soften until the last week of the journey, and softening happened only in slighter degree and in three cages out of the eight which came to Costa Rica. After filling the cages, the remaining candy—one pound—was filled into a honey jar ,closed by a screw cap, and this candy is at present in the same condition as it was when filled in.

On July 17, between 6 and 9 a. m., a clear, sunny day, sixteen queens were taken out of their small colonies, all of them mated just two or three weeks before, and starting laying, and caged. Every queen received twenty-five nurse bees just hatched from strong colonies, special stress being laid upon that no adult bee was taken, as all bees added were strangers to the queen and for the reason that adult bees might be worn out at this time and die within the first weeks of the journey. Before filling the cages, four of them



Cubic box and four stories (squares) of four cages with both sides free for circulating air.

were nailed onto wooden strips (pieces of frames) lengthside, so that they formed a handsome square, and the resulting four squares storied one above the other, the



Four cages (square) nailed on wooden strips

wooden strips just allowing a passage way for circulating of the air over the screens, and slipped into a firm wooden box, open on two opposite sides and equipped with a handle on top for convenient carrying.

July 18, 3 a. m., the cages were transported to the railroad station, and at 8 p. m. the journey really commenced. They arrived in Prague on July 19, a sunny, hot, sultry day; in Magoteburg, Germany, on July 20, 1 a. m., remaining in the overcrowded, hot compartment more than seventy hours, but without signs of uneasiness.

July 20-24, bees in Hamburg, in cool, shady, undisturbed room; quiet. July 24, on board S. S. Rugia. Bees in a cabin without bulls-eye; dark and badly ventilated and at times disturbed. Bees nevertheless quiet as long as cabin temperature remained favorable.

July 30—After having passed the channel, the temperature began to rise. At 3 p. m., bees transferred into luggage room. Temperature in cabin 27° C., in luggage room 23° C. Bees quiet; candy good, stiff; no dead workers.

August 9—Bees roaring, uneasy. Temperature in cabin and in the open 34° C., luggage room 32° C. At 3:45 p. m., bees transferred into a dark, quiet room adjoining the vegetable storing room, the temperature of this room being 70 to 72° C.

August 10, 6 a. m.—Bees roaring, in the outer cages. Temperature too low. At once transferred into the wine storage room. Room quiet, but on account of the open bulls-eye too much light and draft, and at last temperature (25° C.), combined with other circumstances, proved to be unfavorable. Bees remained uneasy and roaring.

August 11—Bees transferred into a room just above the room they were on August 9. Dark; twice a day for about ten minutes disturbed; temperature about 16° C. At 3 p. m., after nine hours remaining in this room, bees quiet and no signs of suffering by cold. Dead bees, four in each of two cages. It is 1 per cent of the whole number of 400 workers, after twenty-six days of journey under quite varied conditions. Candy firm, without any sign of softening, about one-fourth of it consumed.

August 13—La Guayra (Venezuela). Bees in cages on the outside again showing uneasiness, roaring. Eight cages (two squares) given to Mr. Lindorff, destined for Dr. Rothe, director of the Estacion Experimental in Maracay, Venezuela, to save them in case they would not have reached Costa Rica and as a kind of reserve if the other eight should not reach Central America alive.

August 17—Curacao. Bees in the remaining cages comparatively quiet.

August 22—Cartagena (Colombia). Bees in cages restless and roaring. The traditional limit of thirty days for bees in mailing cages is over. No wonder, therefore, if they became unquiet. Every cage with two or three dead bees; candy stiff, signs of becoming watery on the side the bees are eating from. For trial, bees of one square (four cages) are sprinkled with pure drinking water, and, taking the water freely, quiet down.

August 23, 6 a. m.—Sprinkled bees are more uneasy and roaring than unsprinkled.

August 25—Port Limon, Costa

Rica. Conditions as a whole remaining the same, with slight deterioration. From Port Limon on, bees seem to fall off in vigor, moving but slowly, death rate rising to ten in three cages; candy begins to soften on the surface, runs down into the other compartment. It becomes apparent the highest point of endurance is reached; agony stands before the queens.

August 27—Boca de la Barranca, 2:30 p. m. The goal is reached! An hour after arrival, in six of the eight cages all live workers are replaced by new, young nurse bees, which are feeding the queen almost instantly after touching her European majesty. Queens after feeding show more vigor, move faster, are apparently reviving.

August 28—Forty-two days of the journey are over. San Miguel. The last two cages nurse bees are replaced and all cages given to strong, queenless colonies. After four or five days they are released and honey coming in very well; they begin laying heavily. About October 25, they were taken with three frames out of their colonies to form nuclei. At present these nuclei are in good shape and daughters of the imported queens will be laying probably in a few days.

Death rate after forty-two days' journey: Cage 1, eleven; 2, four; 3, two; 4, eight; 5, seven; 6, sixteen; 7, nineteen; 8, five. Cages with highest mortality had candy softened and watery. Rest of candy about one-third in every cage.

Cheap Honey

By Leroy Churchman

I WAS very much interested in an article, written by Mr. W. A. Walsh, of Globe, Arizona, in the American Bee Journal for October about low offers on honey, and am glad the producers he speaks of did not accept any such offers.

We have had some competition this year that has led us to believe that some producers didn't have the heart to turn down some low offers.

There is more cheap honey, or maybe I should say more good honey put on the market cheap, than I ever saw in Kansas before. One fellow shipped in two carloads and cut the price three cents per pound, regardless of the Kansas crop being only 50 per cent of normal.

We produce both comb and extracted honey, put it up in nice shape and find a ready market for it. We bought 1500 pounds to fill our orders last spring, and we never have had to cut the price. But if we had any comb honey on hand now we would have to cut the price in order to sell it.

We sold all our comb honey early at $5.00 per case. Now the western honey is selling to the same grocerymen for $4.50 per case.

They retailed our honey at 30 cents per section and are retailing the western honey at 30 cents per section. Nice little profit, isn't it?

A friend of mine was helping a neighbor fill his silo lately and stayed for dinner. He took a generous helping of butter and the lady reminded him she had paid 60 cents per pound for the butter. He said, "Yes, and it is worth every cent of it," and proceeded to take another good supply.

I feel the same way about honey. Why don't we brace up and ask a decent price for it?

As soon as our comb honey is on the market the rest of our crop goes into five-pound pails and pint fruit jars. They are the best package for our trade. We generally have some unfinished sections at the end of each season, and we found the fruit jar good to dispose of them. Each unfinished section makes two pieces of comb for pint jars. One piece is placed in each jar and the remaining space filled with extracted honey that has been thoroughly strained and properly heated. It makes a pretty package and has been a good seller for us. We get $4.00 per dozen for them and they retail for 45 cents each.

We prepare the honey the same way for the five-pound pails. These take care of our retail trade and we have a few stores selling them. We get $9.00 per dozen for them and they retail for $1.00 each. We have tried the two-and-one-half-pound tins and the ten-pound pails, but we found the five-pound pails to outsell them. We never sell a sixty-pound tin of honey to a grocer. They have proved to be a detriment to the honey trade.

We sell to over two hundred stores, and during the last year four of these stores bought honey in sixty-pound tins. They had a good trade on our pint jars and five-pound pails, but they thought they could buy the honey in sixty-pound tins and do their own bottling, so they could sell it cheaper and also get a profit on their containers. I was in two of the stores a few days ago. One had sold about ten pounds of honey and the other less than five pounds. They had some put up in quart jars with no label on them. It had granulated and was so dark it looked like sorghum. I am sure if I should go into their stores next spring they would tell me they still have plenty of honey; they just haven't had time to melt it up. It won't work. Don't sell the grocer any sixty-pound tins of honey.

The other two stores I mentioned move honey in sixty-pound tins, but they like to outdo the other fellow and are worse than the former. They buy honey for 9 cents per pound and sell it for 10 cents. They paralyzed the market where we had a good trade in a town of 10,000 people. They buy the honey through a wholesale house for 9 cents per pound. What did the producer get?

One more condition we found to check our honey sales was 3,000 pounds of honey put up in three large barrels holding 1,000 pounds each, with a faucet in the bottom to run the honey out. These were placed in grocery stores and they were selling the honey out in milk bottles at 15 cents per pound. Won't they have a picnic when the honey granulates in those barrels!

What is the use of all this price cutting, and how can we do away with it?

Kansas.

Perfect Smoke For Bees

After trying everything from straw to corn-cobs, and having always had my troubles with getting material for smoke, I at last, one day, picked up an old rag that I had used, until it was black, in my printing establishment, for washing type, etc. I lighted this rag, put it in my smoker, and, talk about smoke—why, that rag surely gave it to me. You see in its use as a rag for washing type and rollers with gasoline it retains what is left of the gasoline and at the same time gets full of printers' ink, which comes principally from the pine tree. This makes the rag stiff and almost hard, and when you roll it up to put in your smoker you have a nice compact roll that, when lighted, keeps on smoking, and one rag the size of a handkerchief will hold fire and give out all the smoke you can use for an hour. Try it. Go to your country printer and get some of his old rags, and the chances are that you will say as I do that "it is a perfect smoke."

Victor Vinson, Kentucky.

Oatmeal Cookies

1 cup honey.
1 cup sour cream.
2 eggs.
1 teaspoon soda.
2 cups oatmeal.
2 cups flour.

At St. Cloud. Baldensperger, Dr. Phillips, Mlle. Baldensperger, Mme. Phillips, Perret-Maisonneuve

Visiting Beekeepers Abroad

FRANCE

By E. F. Phillips

AFTER our great days in Switzerland, Mrs. Phillips and I left Geneva in the early morning of June 15 for Nice. Getting back into France through customs was more difficult than leaving that country, for in the meantime I had bought two packages of cigarettes, which remained unopened in my pocket. It took a half hour to go through the red tape of paying more duty than the cigarettes had cost in Switzerland, but after all I enjoyed seeing how it was done and it was worth the francs that I had to pay. Nothing else was bothered, for we had light baggage at that stage of the journey.

At Lyons we changed trains and had time for a bountiful lunch, leaving our baggage in charge of a young porter who reserved space for us on the southbound train. Travel abroad differs considerably from that of this country, but I cannot undertake to write a guide book for tourists. From Lyons we went south to Marseilles and then eastward to Nice, arriving there at midnight. It was a restful day, in spite of the long train ride, for we did not have to exercise our French much. We regretted not being able to stop everywhere, but as usual there were engagements ahead.

At Nice we were met by our old friend Baldensperger, whom a number of American beekeepers met at Quebec and whom all know from his writings. In France among the beekeepers he is everywhere known as "Pere Baldens," partly because the word Baldensperger is rather difficult for the French tongue. Born in Palestine, of Alsatian parents, educated in an English school, a member of the French army as a young man, trained in beekeeping by Americans, married to an American woman, he is the great cosmopolitan in beekeeping. His friends on this side will be delighted to learn that he is the president of the Apis Club for next year, an honor of which he is fully worthy. When we went from the station, there he was, all smiles, and he took us at once to his apartment on the Boulevard Raimbaldi. It was late, but we had to talk over our friends, read our first mail since leaving home, get the news and learn of the plans which Pere Baldens had made for our trip through France.

The next morning we were out early and soon started off by automobile for a trip along the Riviera, accompanied by Pere Baldens, Dr. Raymond Poutier of the Insectarium at Mentone, and several others. That morning we visited Monaco with its Casino and oceanographic museum at Monte Carlo and various other beautiful spots along the coast to Mentone, where we called at the Insectarium. Here we met Madame Poutier and the children, as well as the assistants of the laboratory. Then we were taken to the Italian border, where we actually set foot on Italian soil, but regretted our inability to go further into that land of bees. Returning to Nice we drove over the Upper Corniche Road, laid out by Napoleon and overlooking the coast all the way.

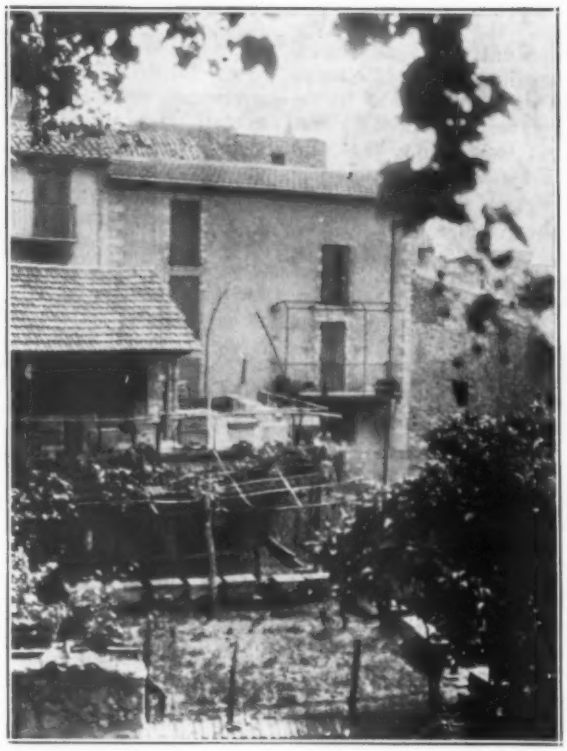
At noon we were entertained at a banquet given for us by the agricultural officials of the Department of the Maritime Alps, in which Nice is located, and by various invited beekeepers. There is no need trying to describe any of the banquets with my limited culinary vocabulary, but they were all delightful. In the afternoon we went sightseeing in Nice with our good guide and saw everything important.

The following day we went on an excursion into the Alps with the society of which Pere Baldens is president. There was a large crowd of us and we took the route back from Nice and made a circuit in the mountains. We passed castles and residences built by the Templars, villages stuck by their eyelashes on the mountain sides, and had thrills beyond description. The dinner that day was in the open air, high in the clouds which circled about us as we ate. Here is history, going farther back than anything which we know

on this side, and the route for the excursion had been chosen by our guide, who knows every step in those mountains.

The following day, June 18, we again went into the mountains, this time by another route, which took us up the valley of the Vesubie to the town of St. Martin, where we had a banquet at an open air cafe at an altitude of 3,000 feet. After that we visited an apiary owned by Pere Baldens on a site where bees have been kept so long that there is no record of its beginning, at least 500 years ago. It is a walled space on the mountain side, so that the bees might be protected against robbers from across the border in the "good old days." We passed the place where 300 French soldiers were at one time driven over a precipice by an invading Austrian army, and when we saw it we understood why none escaped. Here the towns date back to the Fourteenth Century at least, many being considerably older, and all are built close together to enable the people to resist invading armies. We saw at Levens an ancient Roman aqueduct. On this day we also visited a fortified Templar church at Luz, which is still in good condition.

That night at midnight we left Nice, with much regret, for the fortified city of Toulon, where we arrived about two o'clock. After a few hours' sleep we were up again and ready for whatever might come, and we left quite early for the town of Hyeres, on the coast, where the United States Bureau of Entomology has a permanent laboratory, directed by Dr. W. R. Thompson, for the study of parasites of injurious insects which have been imported to this country from Europe. We could not pass that by,



An apiary in the Maritime Alps, owned and operated by a beekeeper who is 93 years old

but we had very little time for the visit, so we went out by taxi and kept the driver waiting for us.

Nothing has been said so far about prices in France, but we were there when the franc was quite low, and never before or since have we felt so wealthy. We were there before prices had been raised much and an American dollar would buy about 35 French francs, having a purchasing value of at least five dollars on this side. It cannot be done again, for prices have since risen and the franc is also higher now than it was then. Our taxi ride and the reservation of the taxi for all morning cost us $2.34, and a visit to the laboratory was well worth it. But imagine engaging a taxi in this country that way!

Returning to Toulon, we took a train at noon for Marseilles, where we were met by a delegation of beekeepers. We went to the Hotel de Bordeaux and l'Orient, one of the extravagant names for hotels which we often encountered. The best one that I know is the Hotel of the Universe and Reunited Portugal! We were taken out to see the sights of Marseilles and had a great time. There were an English and a Scotch beekeeper in the group and we again practiced our English. On this trip we visited the Church of Notre Dame de la Garde, high up on a rock over the city, where the mistral wind was blowing just a little harder than we ever before experienced. Then we went to the museum, and to the art gallery, where we saw many familiar paintings. Finally we visited the apiary of the local beekeepers' society, directly behind the Palais Longchamps, where we met still more beekeepers.

The following morning we again went sightseeing, but I shall not try to picture Marseilles. It is a wonderful city, and the only thing that I shall say about it is that the people there rather pride themselves on their ability to draw a long bow. The prize Marseilles story is of a sardine so large that it one day swam into

Apiary at Chateau d'Odors owned by Dr. de Labarthe

the harbor, turned sidewise and completely blocked the entrance. We saw the harbor entrance and a picture of the sardine, which is all the evidence that we have for the truthfulness of the story, but we do not doubt it in the least. We kept the picture of the sardine as proof.

At eleven o'clock Sunday morning we went to the headquarters of the local beekeepers' society, where we were received by officers and delegates of eight departmental beekeepers' societies in a delightful ceremony. More flowers for Mrs. Phillips and addresses of welcome. Mrs. Phillips developed a strong right arm carrying bouquets presented to her everywhere, and beautiful indeed they were. After that we all adjourned to a cafe in the open air on the edge of the city, where a banquet was served.

When we were welcomed as heartily as we were everywhere, it fell to my lot to reply, and that was where the hard work came in. It would have been rather unappreciative of the wonderful welcomes which we had if I had replied entirely in English, even though I had Pere Baldens there to act as my efficient interpreter. I always began in French and managed to say how much we appreciated their warm reception, but my six French words were soon exhausted and I was compelled to fall back on the mother tongue. My pronunciation of French is not quite perfect, but I was able to excuse that in southern France by saying that I speak the French of northern France. That was a joke which our French friends appreciated fully and they always gave me a laugh. Neither in French nor in English could I tell them how deeply we thanked them for their hospitality.

The banquet at Marseilles was a wonderful event, but space is too short to tell more about it. There we met M. Paul Sirvent, president of the International Congress held in that city some years ago, and many other beekeepers whose writings I had long read. That evening we said our farewells to our friends there and took a night train for Toulouse, where we arrived at 3:30 the next morning. There are no sleeping cars of the American type in France, but we were fairly comfortable. It was a pity to pass so many places of historic interest as well as the bee disease laboratory for France, located at Montpelier, but again there were engagements ahead of us and we could not stay. The death of Dr. Vincens seems to have delayed the investigations in the laboratory.

The following morning we were up early again and were taken to the apiary and experimental farm of the University of Toulouse by Dr. de Labarthe, president of the local society of beekeepers. After that we were taken to the meeting place, where we were received by the local society and where I was presented with a beautiful medal as a souvenir of our visit. The room was decorated with an American flag, and no pains were spared to make it a noteworthy event for us. Then all adjourned to a banquet in a local hotel. In the afternoon Dr. de Labarthe took us to his country estate, Chateau d'Odors, which has been in the family since 1300 and where he has a beautiful and profitable apiary, and in the evening we were entertained at dinner in his city home.

The next morning, June 22, we went to Castanet to the home of M. Victor Dumas, where we were received by members of another local society. A picture of part of this group appeared in the American Bee Journal for August. There may be some reason for two societies, but we never interested ourselves in local beekeeping politics and cannot tell why they are not united. We conclude that beekeepers are the same everywhere, for we do not always agree on this side either. At M. Dumas' place we met some excellent beekeepers, including the president, Abbe Abadie, M. J. Couteral, of Levardac, and others, who had come considerable distances to greet us. Here again we had a wonderful banquet and again I tried my French.

That afternoon we went back to Toulouse and took a train for Pau, where Miss Nora Baldensperger, daughter of our guide and friend, is professor of English in a college. We reached Pau in early evening and were met at the train by Miss Baldensperber and M. Yves Michaud, who was born in Canada and who acted as interpreter for the American army during the war. He has a supply business at Pau and is a growing beekeeper of whom we shall hear more some day.

The following morning we went by automobile to Lourdes, where we saw the shrine to which thousands come annually for healing. The day of our visit an excursion from Belgium was there, and there were thousands of devout pilgrims about the grotto where the Virgin Mary is supposed to have appeared to the peasant girl Burnedetta. No hospital in America could show more mained and sick than we saw there that day, but we did not stay to see any miracles performed.

From there we went into the Pyrenees, up as far as the Cirque of Gavarnie, having a banquet on the road at the outdoor restaurant Pintat, at St. Saveur-les-Baines. The Pyrenes differ greatly from the Alps that we saw in Switzerland and back of Nice, and it was a marvelous drive. At the top of the mountain at Gavarnie was the boundary of Spain, but we did not make the climb. On the road we visited apiaries and saw so much that we cannot recall all of it.

(To be continued)

Division of Labor in the Beehive

Translated from the German by L. Illingworth

MORE than one German bee journal contains an account of Dr. Rosch's investigations on the above subject. Dr. Rosch is a pupil or assistant of Dr. Zander, the discoverer of Nosema Apis, and appears to be a careful and accurate observer. As his observations cover a field likely to be of interest to all lovers of bees, and also possess considerable practical importance, I give a brief account of them here, taken mainly from a short summary by Herr Feile in the June number of Die Bienenpflege.

By using an observatory hive and marking a large number of young bees soon after they emerged from the cells in such a manner that each could be distinguished from the others, it was possible to keep a record of the work done by bees of different ages.

First, the newly emerged bee attends to its own toilet, during this time also receives food from the tongues of older bees. Next it sets to work zealously polishing up empty brood cells. After removing any debris, it proceeds to lick the walls of the cell, moistening them all over with some secretion, giving the cell that polished appearance which has often been noticed just before the queen lays in it. Usually several very young bees assist in licking out a single cell. From time to time the bee rests and again receives food from other bees. At this early age a bee does not gnaw away the rough edges of the cells. This is done by workers about fifteen to twenty days old.

Now notice a three-day-old worker. First she makes for a honeycomb and fills herself with honey; next she visits a pollen cell and obtains some of its contents; then she returns to the brood nest and seeks out a cell containing a larva within one or two days of being sealed over, which she supplies with the food she has just taken from the honey and pollen

cells. Such larvæ only are fed during the first three days of the nurse bee's work. Later on she undertakes the feeding of quite young larvæ. Dr. Rosch believes that the food glands in the worker bee's head continue to develop during the first days of its life, and that only about five or six days after it emerges from the cell are they capable of functioning. The worker has now become a nurse bee.

The first play-flight takes place between the fifth and fifteenth day of the bee's life. These flights last quite a short time and take place only on bright, sunny days. They have nothing to do with foraging and are concerned solely with noting the position of the hive. Such bees may frequently be observed receiving food from other bees of the hive immediately after the play-flight.

After serving as a nurse the young worker passes on to become a receiver of honey. She even ventures on to the alighting board to meet the foragers laden with nectar. This she takes from them and deposits in the cells. This work is first undertaken between the eighth and fourteenth day. After taking up this duty a bee has never again been observed feeding larvæ. The time this work lasts lies between the ninth and eighteenth day of the bee's life.

The pollen gatherers deposit their own loads in the cells and hurry away again, leaving the pollen to be rammed in by one or other of the "honey receivers."

Now a new task awaits the young bee—that of guarding the entrance and keeping the hive clean. The "sentinel instinct" develops shortly before the bee becomes a forager, or somewhere between the fifteenth and twentieth day of her life. "Neither bees of the ages described above nor those that have attained the age of foragers about to be discussed trouble themselves about the defense of the hive."

The last activity of the worker bee is foraging. She undertakes to provide food for the colony, and has now become a field bee. Whether she gathers nectar or pollen depends upon the needs of the stock at the moment.

If we consider the above statements as a whole, we see (as Dr. Gerstung constantly told beekeepers) that bees of all ages must be present in a stock, for every age has its appointed task. A variety of work has to be performed. The portion of its life which an individual bee devotes to this or that employment depends both on the needs of the colony and still more on the development and decline of various glands. —British Bee Journal, June 24, 1926.

An Old Bee Book

By A. A. Evans

I HAVE before me a worn, yellow, dog-eared, well used pamphlet on beekeeping, issued in 1799. The price on the outside cover is: "Gentlemen, sixpence; cottagers, twopence." It cost me nothing. The first thing about this booklet which appeals to me is that it has been, long ago, well used, valued, pored over, and carried about. Its present condition testifies to that. When its pages were fresh and white it indicated the last thing known in the art and mystery of beekeeping; now, such is the passing worth of human knowledge, its value is that of a fire lighter.

Yet each page has something of interest, both in the way of bee lore and of the human element. "If you are struck by a bee," says the writer, "rub the wound with the bee which stung you." He does not say whether this is for the good of the wound or to be a lesson to the bee. "When a swarm arises take a (straw) hive, rub the inside with balm leaves, then a dash of strong ale, and wave it amidst the flying bees; after that ring a bell and the bees will seek the new hive." Evidently the writer considers the smell of balm and beer was as attractive to the bees, or more so, than that of the odor of nectariferous flowers. "The life of a bee is not above six months, and curious observers say that a queen can lay 200 eggs a day." More close enquiries today teach that a good queen will lay from 2,000 to 3,000 eggs a day during the summer honey-flow.

"A hive has three uses: It produces honey for your pleasure and for food; wax, of value for divers purposes; and a posset called mead, drunk of old by gods and heroes." It is still drunk in many a country cottage as a cheering cordial by brave men, ploughmen, shepherds, carters, and others.

The mention of wax in this list of hive products reminds us that in days not so long ago this formed no inconsiderable part of the bee master's profits. In years before petroleum reached these shores, or the manufacture of coal gas developed, of all illuminants, this of beeswax was the most prized. The only alternative was rank smelling candle dip or rushlight, both made of mutton fat. The long wax taper burnt with a steady white light, and in its burning gave out a subtle fragrance of the flowers of which it was begotten. No wonder it became a rule in the mediæval church—and a rule to this day in Roman, Greek and Russian churches—that no light should stand on the altar but those made of wax of the hive. Today the profit of beekeeping is measured almost entirely, in this and most other countries, by the value of the honey yield, but, for centuries in the distance behind us, the production of wax counted for a great deal.

Recently I read an amusing account written by an up-to-date American beekeeper, who, I don't know for what earthly reason, chose to settle and make a home in a remote part of Spain. Spain still dwells in the Middle Ages, at least most country parts do, and the soul of this hustling American was grieved at the persistent, obstinate, backward-looking way the Spanish peasant chose to keep bees. "They all keep bees hereabouts," he says, "but keep them in the same sort of cylinder skeps as the Moors did, a thousand years ago." New hives from America, with all the latest improvements, were eagerly inspected by his benighted neighbors, and the vastly improved honey yield by modern methods carefully explained, and they seemed deeply impressed, but he failed to win a single convert. At last he discovered that what the rural dwellers of the peninsula were after was wax, quite as much as honey, and that was what the modern hive failed to produce. Nearly every Spanish cottager keeps bees, but he has an understanding with his reverend father that for all wax provided there is good payment, money down.

My old be-thumbed textbook of beekeeping, although it belongs to a time when wax was making way for cheaper compounds, still follows the traditions, gives directions for melting and clarifying wax and making it into odoriferous tapers, if not for the altar of the church, for the rich man's table. Other days have other ways; the bee master of our time seeks for nothing but honey. Wax is but little in the reckoning.

England.

Advertising

"It is good advertising to furnish honey, free of charge, for club and lodge dinners. Any inexpensive method to allow prospective customers to sample honey is more likely to bring sales than display alone."—(Russell H. Kelty in Department of Entomology, Michigan State College.)

Southwestern Honey Plants

By Frank C. Pellett

Amsinckia

A NEW honey plant is always of interest to a beekeeper, and it is common knowledge that there are many valuable ones which have not yet been called to public attention in the literature of beekeeping.

Such a plant is the **Amsinckia.** It was at Davis, California, on the eighteenth of March, 1925, that Prof. G. H. Vansell called my attention to a weed-like plant growing along the roadsides and in the grain fields which he stated was of considerable importance as a stimulant to spring brood rearing. The species was **A. lycopsoides.** The blossom is small and inconspicuous, as will be seen by the photo taken at that time. The farmers call the plant fireweed, because it irritates the skin of men working in the harvest. It is also called leather-breeches or wooley-breeches.

The tendency to become a weed is apparent in its spread to the eastern states, where it has become established in waste ground in Massachusetts and Connecticut, where it is likely to be noticed by observant beekeepers. The blooming period in California is from March until May, while in the East it is from May until July.

Another species, **Amsinckia intermedia,** the buckthorn weed, is reported as having been found in eastern Long Island and Nantucket. This one is abundant in grain fields of the Sacramento Valley, where it occurs in dense masses.

Jepson lists six species as native to California, and Rydberg lists seven as found in the Rocky Mountain region. He gives the common name as Fiddle Neck, though that name is commonly applied to the Phacelia, also a native of California.

Vansell states that the genus is of decided value to the bees for nectar and that they work the blossoms freely throughout the period of bloom.

Phacelia

While botanists recognize one hundred or more species of Phacelia which are native to America, there is one which is widely known in both Europe and America. The fiddleneck **(Phacelia tenacetifolia),** native to the Sacramento Valley and southward in California, has been planted in gardens in many countries. In its native country it is often called sheep tansy, and in Europe is called tansy-leaved Phacelia. It was introduced into Europe, according to Thomas W. Cowan, in 1832, and has been widely grown in Germany, England and other countries as a bee pasture and to some extent for forage for animals also.

Jepson, in his "Flora of Middle Western California," states that it furnishes bee pasture in about six weeks from seed, and quotes Harry E. Horne to the effect that "the nectar flows all day. The honey is amber in color and sometimes light green, and of a mild aromatic flavor. Cows fed upon it show a marked increase in yield of milk, but will not eat it alone at first."

A recent experiment at the California Experiment Station was calculated to popularize the planting of this Phacelia for pasture for livestock and at the same time provide something for the bees. The writer secured seed and planted in his garden in Illinois, where it bloomed very freely. However the plant is an annual and fails to reseed itself successfully in our severe climate. By saving the seed and replanting each season, one can grow it readily enough.

There are several related species which yield some honey in the Southwest from Texas to California. **Phacelia purshii** is reported as yielding much honey in some localities in Missouri and Tennessee and southward.

Filaree

There are several species of **erodium,** called by various common names, such as stork's bill, filaree, alfilaria, musk clover, pin grass, heron's bill, etc., common to the Southwest. In Arizona I found a filaree growing in the desert in late winter when little else was showing. The bees were busy on it in February, although not many blooms were yet open. **Erodium cicutarium** is probably the most widely distributed. Jepson writes concerning this species, in his "Flora of Middle

Amsinckia, or leather-breeches

Phacelia

Western California": "Barren hillsides or dry plains everywhere, far more common than **moschatum,** in all interior or semi-arid regions. Beginning to flower in February or March and in many places continuing through the summer, it is an esteemed forage plant."

California beekeepers regard it as an important minor honey plant. The author did not find any bee men who reported large surplus from it, but it is usually mentioned among the plants which yield some honey.

It is regarded as a valuable wild pasture plant on the ranges and is of interest to the stock men as well as to the beekeepers.

E. cicutarium is credited as having been introduced into this country from Europe. If so, it has found congenial surroundings over a wide area. It is found in a few widely separated areas in the east from Connecticut to Alabama, but finds a general distribution in the dry areas of the Southwest.

Death of O. H. Urffer

It is with regret that we announce the death of Mr. O. H. Urffer, on November 26. He was apparently in good health on Thanksgiving day, and had spent part of the day in his apiary.

Mr. Urffer had engaged in beekeeping ever since he was nine years old, and had been a teacher of public music for thirty-two years.

He was acting as secretary-treasurer of the Lehigh Valley Beekeepers' Association of Pennsylvania at the time of his death. His home was in Emaus, Pennsylvania.

Cuban Honey Exports

In connection with the production of honey in the United States, I beg to give below quantities and value of Cuban honey exported from Cuba during the current year to the countries mentioned below:

	Pounds	Value
United States	28,349	$ 2,180
Belgium	1,366,650	111,463
British W. Indies	220	3
Canary Islands	121,820	9,691
Denmark	31,954	2,530
Germany	1,606,417	89,271
Holland	4,643,858	335,802
United Kingdom	597,597	37,106
Total	8,396,865	$588,046

It may be mentioned that nine-tenths of the exports are made through the port of Habana.

C. B. Hurst, Am. Consul Gen.

Filaree, or pin clover

Meeting of the Section of Apiculture

Notes reported at the meeting of the Section of Apiculture of the American Association of Economic Entomologists, affiliated with American Association for the Advancement of Science, at its annual session in Philadelphia, December 27 to January 1:

The various meetings of the Apicultural Section were attended by from twenty-five to fifty entomologists and beekeepers, mostly from the eastern and central states.

In the opening address, the chairman, Mr. James I. Hambleton, of Washington, D. C., discussed some of the present needs and problems of American beekeeping. He said briefly that the work of the Bee Culture Laboratory at Washington is suffering for need of better support of the individual beekeepers of the country. This need is reflected in the present inactivity of our national organization. The stimulus which beekeeping obtained at the beginning of the war has been lost, and the present deplorable honey marketing conditions are, in part, due to lack of efficient, organized study of the problems involved. A vigorous, well backed national organization is needed also to function as a stabilizer to the states. There is much lost motion because of much duplication in research projects in the various states. Lack of mutual interest and understanding is to blame for local jealousies and for retaliatory quarantines. Lack of national and state organization results in bees being pushed to one side in all kinds of governmental reports and in the census. For lack of vision some beekeepers hide their methods and withhold other valuable information. Although $100,000 is appropriated annually for inspection, yet disease takes an annual toll of 10 per cent of the bees in the United States. There should be projects established in home economics schools and colleges to popularize honey. With better organization would come funds to stimulate more systematic research, better knowledge and improved methods.

Mr. W. J. Nolan, of the Bee Culture Laboratory, presented a very interesting paper in which he discussed the present status of brood rearing investigations in Europe and America. He said that although the observations of some investigators agree very closely, yet those of others stand rather widely separated. No observer reports an egg-laying record of more than about 3,000 eggs a day. It is his belief that the daily egg-laying rate of a queen rises and falls with the number of trips made daily by the bees to gather nectar and pollen.

Mr. Ray Hutson, of New Brunswick, N. J., gave a report on experiments to determine the value of chlorine gas as a disinfectant of American foulbrood. He said that a 48-hour treatment at 37 degrees centigrade resulted in complete destruction of all spores, but he could not recommend the treatment because of the following disadvantages: The chlorine gas attacks all metal parts not protected by wax and propolis, the operation is very mussy, and even after sixty-two days the combs retain enough of the odor of the gas to make them unacceptable to the bees.

Mr. L. M. Bertholf, of Western Maryland College, gave a report on the "Relative Sensitivity of Honeybees to Light of Different Wave Length." He said that light of different wave length but of the same degree of intensity was obtained by the use of the color photometer. When a bee was placed in the path of a ray of light, she would move toward the source of the light if it stimulated her optic system. If, under the definite, controlled conditions of the experiment, she did not move toward the light this was interpreted to mean that she could not see the light. It appears from the results obtained that red is about equivalent to darkness to the eye of the bee, and green can be seen about the best. In arranging a scale of colors for their visibility to bees and giving green a value of 100, then the following colors stimulate the eye of the bee about as follows: Blue, 54; yellow, 29; violet, 3; red, 2; darkness, 0. As a practical application of this principle it was brought out in discussion by Mr. G. H. Rea that when placing bees in the cellar for winter he had found that if a red lantern was used to illuminate the room, no bees flew to this light.

Mr. T. H. Freson, of Urbana, Ill., presented a paper on "The Fertilization and Hibernation of Queen Bumblebees Under Controlled Conditions," in which he reported that he had succeeded in getting queen bumblebees fertilized in small glass jars and when tethered out on a string in from 90 to 95 per cent of the trials. Honey and pollen from honeybees is suitable food for bumblebees. A practical application of his discovery is in the rearing of bumblebees to pollinate certain crops.

At the evening session Dr. E. F. Phillips, of Cornell University, gave an entertaining address, entitled, "Some Things I Saw and Heard While Visiting Beekeepers and Their Societies in Europe in the Summer of 1926." He said in part that beekeepers' meetings are much more largely attended in France than in the United States, and that one or more men prominent in political and social matters are always present. Beekeepers are largely the highest class socially and politically. The German-Swiss Beekeepers' Association has 17,000 members and their official organ is the second or third best bee publication in the world. Every department in France has its association, and every association has an official organ.

Queen Mating Demonstration

Mr. Lloyd R. Watson followed with a demonstration of the instrumental insemination of the queen bees.

Queenbees mate on the wing high in the air, and they refuse to mate under any other conditions. Since we have been unable to control the male parentage of these useful insects, genetical studies and race improvement have been well nigh impossible. During the past summer there has been developed in the author's apiary a successful method of controlling mating by instrumental insemination of virgin queens with semen freshly dissected from selected drones.

The operation is performed under a binocular microscope, the stage of which is equipped with a Barbour pipette holder which in turn grasps the barrel of a capillary syringe. The plunger is controlled by a fine screw and head. The virgin queen is placed, back downward, into a form carved out of a block of wood exactly to fit her body, the tip of her abdomen just projecting over the edge. She is secured in this position by several loops of silk thread thrown over her body and around the block.

The point of the syringe is first pierced through the wall of the seminal pouch of a drone which has just been made to ejaculate by the stimulus of decapitation, and about two-tenths cu. mm of the pearly white mucus is taken up. The syringe is then projected on into the region of

the active sperm and this is taken up.

The queen, fast on her operating table, is placed on the stage, the tip of her abdomen in the center of the magnified field. The genito-anal plates are gently pushed apart with fine-pointed tweezers while the loaded syringe is cautiously advanced into the vagina, and the sperm discharged there. As the syringe is slowly withdrawn, the mucus is forced out of the instrument and left to coagulate as a plug in the vulva of the queen, thus to prevent the escape of any of the semen and to seal it away from the air.

During the month of September forty-two virgin queens were operated upon in this way. Twenty-four of them later proved by their behavior or by postmortem examination to have been inseminated to a degree ranging all the way from very slight to apparently perfectly normal.

The degree of success thus far realized, about 50 per cent, has been attained, we believe, not by the application of any new principle to this time-worn problem, but rather by the strict refinement of apparatus and technique previously employed by several investigators.

Taking Away the Bees

By George Gilbert

I faced the crisis that all amateur beekeepers face in time. My bees were taking time from other work vastly more profitable in the money sense. The vacant lot next door, upon the vacancy of which I depended for free flight for the bees, seemed certain to be built upon. Thus I could count upon neighbors who would be imposed upon by the constant winging of thousands of bees across their lot. I like peace with my neighbors. The bees promised to bring about contention. I had to stop increase, at least. My small output of honey was not enough to make it worth while for me to try to market it when I had other business that would pay me better for my time. I had enough honey ahead for several years. I had given away so much honey to friends that honey from me was no longer regarded as worth much. I had made a success with bees, learned much about them — and about myself — that I never could have known without the bees to study.

And now I had to decide. I must be a bee man altogether, moving to a location where I could give my bee-craze full bent, or quit. I quit—for the time being, at least. In the future—well, I decided to keep my bee books and one hive—tool, perhaps for seed, as it were.

So, in answer to my advertisement, Frank Langdon and Julius, his friend, came to get the bees. It was April. The day was warm. Whereas all about me bees had died off or dwindled, my bees were booming. I had wintered them in snug cases, well packed with leaves, and on stands that kept them from dampness below. They had wintered in double ten-frame hive bodies. One colony had a modified Dadant below, a ten-frame standard above. I had let them have the two bodies full of honey and stores of pollen. They had gone into the winter strong and came out stronger, despite the bad season. They had enough stores to last till clover bloom, if needed. They had made me 100 pounds surplus each the year before.

It seemed queer to watch other men handle my bees. They were expert at it. They soon had the hives screened and ready. I watched them put them onto the wheelbarrow and trundle them to the waiting truck that was to take them to Kirkwood. After a chat, they loaded the bees. They lost hardly a dozen, having arrived in the morning before the bees were out. The few stragglers came up with the hives to the truck and "zooned" about in the warm April air.

Pretty soon the two old-timers were in the truck, ready to start. I had been an interested spectator until then. But, as the truck started, I felt for the first time that the bees were going. My bees were going. The arrival, the dicker, the packing-up, and chat, had taken off the edge of the loss until then. But now they were going. I waved my hands to the two well pleased men in the truck. They smiled back at me. The few bees hanging about made ever wider circles, then made it back to the old stand. This moving away in a truck seemed to be beyond them. They had had enough of it and were headed for home.

I went down the lane, to the place where the hives had been. The empty spots, dry and brown amidst the greening grass, seemed desolate. A few bees hummed about, disconsolate. Then they began that whine that tells of loss of home and queen. The little bunches clustered and condoled plaintively.

The April sun shone brightly. The warm breeze came, with a scent of early spring flowers. A bluebird flew over, calling, calling, calling. A robin carried stuff for his nest in the Snow apple tree. I walked away.

The little bank never would be the same to me—

The bees were gone.

What's In a Name?

By Leslie Burr

Several people of late have voiced the opinion that the name "foulbrood" should be changed to something not so suggestive, the reason being that the name is repulsive and therefore injures the sale of honey. Other people, however, are so fond of the name that they put it on their honey labels, and want laws passed compelling all honey to carry the name "foulbrood" on the package.

Personally, I do not agree with either suggestion. The name "foulbrood" has no business on a retail package of honey, but that is no argument in favor of changing the name to something not descriptive of the disease. There are a number of names of human diseases that are not pleasant words, but, like foulbrood, they are descriptive of the disease, and so are good names. In fact, when traced to their origin, names of most things are found to be descriptive.

And, after all, "foulbrood" would smell as bad under any other name.

Alfalfa Weevil Hates Wet Feet

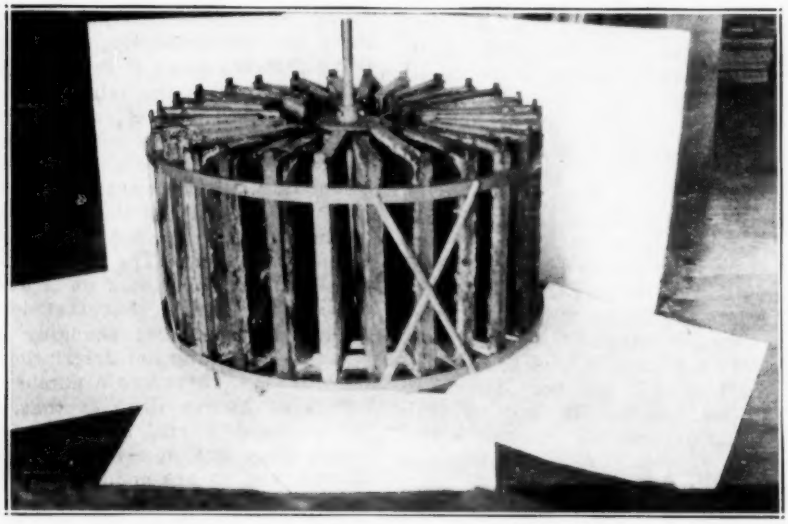
According to Corkins in the Wyoming Beeline, the alfalfa weevil is never due to become a pest in the surroundings of the Mississippi Valley, since it has been shown that the weevil does not develop rapidly to an epidemic stage under the heavy spring rainfall conditions of the eastern slope of Wyoming. "As we progress eastward, this important inhibitory factor is found to increase and it seems likely that in the Mississippi Valley states proper it will never be able to reproduce itself to an epidemic stage. Dr. Cook, of the Montana Experiment Station, has made a thorough study of the climatic conditions where the weevil now occurs, both in this country and abroad, and finds that it never becomes epidemic where the spring rainfall exceeds three inches."

Wintering Bees In Canada

This is a 32-page bulletin, by C. B. Gooderham, Dominion Apiarist, describing the different modern methods of wintering bees in Canada. It is published as No. 74, New Series, and may be had from the Department of Agriculture at Ottawa. It gives a detail of the different methods employed, with nineteen engravings. A picture is given of the apiary of Mr. J. Tissot, who has been so very successful in following our methods in a locality as far north as Ottawa. He is an enthusiastic supporter of large brood chambers.

Radial Extractors

By S. P. Hodgson



Comb carrier of radial extractor

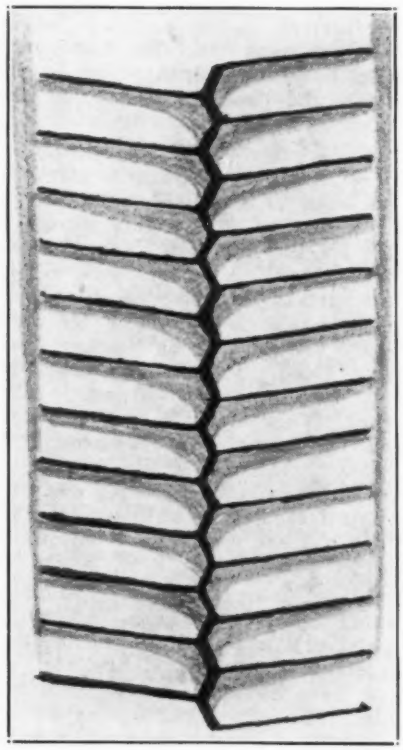
THERE seems to be a misconception on the part of some beekeepers as to the way a radial extractor takes the honey out of the combs. As their ideas may be common to many all over the country, who are used to the better known type of machines, it might not be out of place to say a few words here concerning the working of this comparatively new extractor.

An idea fairly common among those who have not seen a radial extractor work is that the honey leaves the various cells and flies off in the direction from which the comb carrier is turning, and that it is necessary to stop and then run the machine in the opposite direction to get the honey out of the other side of the comb.

In practice, the direction in which the machine is run does not matter, and it cannot be seen that the combs empty on one side any faster than they do on the other. It appears that the cells on either side of the comb nearest the center of the machine, and to the bottom bar of the frames, are the first to empty; but this is due to the fact that the honey from these cells passes over the tops of the outer cells and gives them the appearance of being full. But a closer inspection will reveal an air bubble in each cell which does not appear empty.

The drawing illustrates the movement of honey during the process of extraction, and shows how it is forced to one side of the cell, and out. It then passes over the tops of the cells farther out and flies off from the top bar. It cannot be seen that any honey leaves the frame except at the top bar.

As the exit of honey is not so direct as in the reversing type of extractor, it follows that the time



Direction of honey flow when extractor is operated

taken to empty a comb is a little longer when using the radial machine; but owing to the fact that many more combs are being emptied, and both sides are being done at the same time, it is a great time saver.

For the beekeeper who uses power, the radial machine is ideal. It requires practically no attention while doing its work and the operator is free to prepare another batch of combs. The number of combs extracted is governed by the number which can be uncapped, as only a minimum of time is taken up in operating the machine. The whole operation is very gentle, with no side pressure on the combs, and unless an excessive speed is used at first, when the combs are heavy, there will be none damaged.

It was hard for us to believe that this was a cold-honey extractor, but last year, and this, we have done our extracting on rainy days in November and the honey had been off the hives for about two months. Although we extracted in an unheated building, the machine worked very satisfactorily and without damage to the combs. Canada.

Indiana Inspection Report

The following is the statistical report of bee inspection in Indiana for the year starting October 1, 1925, and ending September 1, 1926. Seven inspectors were on the force:

Apiaries inspected	5,752
Live and dead colonies inspected	49,181
Dead colonies inspected	7,681
Live colonies inspected	41,500
Live A. F. B.	2,041
Dead A. F. B.	1,431
Total live and dead A. F. B.	3,472
Per cent live and dead A. F. B.	.06+
Live and dead A. F. B. burned by inspectors	1,427
Live A. F. B. treated by inspectors	79
A. F. B. reported burned or treated by beekeepers	926
Total A.F.B. treated or burned by inspectors and beekeepers	2,432
A. F. B. not treated or burned October 1, 1926	.02%
Live and dead E. F. B.	129
Per cent live and dead E. F. B.	.003-10
Cross comb colonies found by inspectors	3,882
Per cent cross comb colonies	.07+
Cross comb colonies transferred by inspectors	104
Average colonies per yard	8.5
Special demonstrations	35
Special meetings	62
Counties visited	60
Free meals to inspectors	49
Free days driving for inspectors	144

Chosen Production of Honey, 1925

The production of honey in Chosen (Korea) during the year 1925 amounted to 1,189,855 pounds, the provinces of North and South Heian and Kogen being the leading producers.—Consul General R. S. Miller, Seoul, Chosen, Oct. 12, 1926.

Personal Recollections of the Editor

Building a Honey House

A HONEY house? Do you think we could have afforded to build a honey house, when we lived in a log house, during the first ten or twelve years of our beekeeping? No. When we wanted to extract honey, as we did not like to smear honey upon the floor of our home, we had made up a sort of tarpaulin, of "duck," painted so as not to soak honey, and this was spread upon the floor of the kitchen before bringing in the honey extractor and the supers. A barrel, with a sieve over the bunghole, was set up in a corner, over a skid, high enough to enable us to put a pail under it, when drawing out the honey. Sometimes we had three or four such barrels full of honey, which we retailed out as fast as we could. Occasionally an accident would happen, more or less enjoyable. I remember once placing a ten-pound pail under the honey gate, to catch the possible drip during the night. The barrel was leaning forward so the honey might run to the faucet. During the night the thick, partly granulated honey settled forward so as to bring the center of gravity to the front end. The barrel tipped forward, the honey gate was opened by the edge of the pail that had been so carefully placed there to catch the possible drip, and the honey noiselessly filled the pail and spread evenly upon the floor.

Noiselessly, yes! Did you ever notice how noiseless honey is?

Half a barrel of honey spread upon the floor of the kitchen! Luckily we did not get up during the night, so we avoided tramping in it. This honey had to be gathered in the best possible way and kept for feeding. Bees do not ask any questions, but they probably wondered at the fact that this honey contained more or less floor dust.

Our next honey house was a shed which was not built sufficiently bee tight and moth tight. But by using tar paper nailed over the cracks, we managed to get along till we could build better walls. We had plenty of experience with leaky bee houses, as the reader may remember if he read my "Personal Recollections" on the early extracting of honey, page 381 of August, 1925. We had to deal there not only with bees, but with rats and mice also.

Many people write to ask how to build a honey house. The size of such a building must depend upon how many colonies you expect to keep, whether you expect to put up your honey in small packages or sell it all at wholesale; whether you wish to winter your bees in the cellar or out-of-doors, and also whether you expect to do your work at a central plant or at each of your outapiaries. You may want to keep a truck in a separate room of the same building. You may want to use power for running your extractor. So there are as many ways of building a honey house as there are beekeepers. We gave a number of descriptions, with cuts, at different times. I will name only a few of the latest: Caraway's Honey House, page 168, April, 1924; E. L. Hofmann's, page 162, April, 1925; Morley Pettit's, page 215, May, 1925; page 261, June, 1925.

Supposing that you wish to build a modest honey house without a bee cellar; there are a few important points to bear in mind. You must not have any spaces under a wooden floor for rats or mice to dig into. Have a concrete floor or foundation under the entire building, projecting about six inches, with a slope of not less than two inches, outside of the wall. This will give you a dry, level floor, absolutely mouse and rat proof, and will not be much more expensive than the walls of a foundation. Have your walls bee and moth tight, each window and each door provided with good bronze screens. These screens are about three times as expensive as the ordinary black wire screen, but they never rust out.

Some beekeepers want double screens, an inch or more apart, so the bees on the inside may not feed their load of honey to the bees on the outside. I acknowledge that this happens sometimes; but if you arrange to turn your bees out as fast as they are brought in, there will be but little need of double screens. We prefer to make the window screens high enough to project, six inches to a foot, above the window frame, outside, with a quarter-inch space for the bees to escape, at the top, between the screen and the wall. When they come back they usually go to the point in the screen where the odor of honey is perceived and rarely find their way back to the inside. Should this happen, close the window a little while.

The great point is not to allow many bees to come in with you. We prevent this by making an entry or areaway entirely screened at the main door, with two screen doors, closing automatically with a door spring. The bees always seek entrance at the corner of this entry where it joins to the main building and where they can scent the honey. Rarely do they follow the beekeeper carrying in the honey. Sometimes a little smoke in this areaway will discourage them. The indispensable thing, of course, is not to encourage robbing by leaving the hives open too long or by having leaking honey in the apiary. In the old days, before comb foundation, when we had crooked combs in the hives, there was much more difficulty in preventing robbing. Don't forget that "an ounce of prevention is worth a pound of cure."

If we build everything in good shape, we should have no difficulty in keeping out bees and moths. The latter are usually brought in with old combs. It is a good plan to burn some brimstone occasionally, in the bee house, in the summer, closing all openings till the room is well saturated. It kills the flies as well as the moths, and is inexpensive.

A good honey house ought to be kept warm in late summer. It may not need more than a good exposure to the sun. But it is still better, if it is worth while, to have a heater, which will also furnish steam to melt honey if we have to handle it after granulation.

To build a honey house with a bee cellar under it, and with all the conveniences necessary to put up honey for retail, will cost quite a sum of money. But a practical beekeeper will never regret it.

I might add that the difficulties encountered in securing straight combs, before the invention and use on a large scale of comb foundation, made the handling of movable frames much more difficult than now. It was not easy to have combs that were not fastened to one another by the bees, so as to cause honey to run when taking it out of the hive. So we had much more difficulty with robber bees and with leaking honey. I remember that at one time we were in the habit of having a wash-basin, a pail of water and a towel constantly in the apiary, so that any spilt honey could be done away with before the robbers came. When I compare this and the primitive honey houses we had with the present convenient methods, I am enthused at the progress made. The method of smoking is also much improved, for the bee-smoker was unknown then and we used a little smoke on the end of a stick of dry, rotten wood.

The Mid-West Horticultural Exposition

The Mid-West Horticultural Exposition, which is held at some point in Iowa every two years, is a unique institution. By means of the affiliation of several organizations working along similar lines, much greater results are obtained than would be possible with each of these associations working alone.

The State Horticultural Society, the Iowa Beekeepers' Association, the Iowa Fruit Growers, the Vegetable Growers, the Florists, the Peony and Iris Society, etc., each hold their own conventions, yet all are affiliated, much after the manner of the various states, into a general union.

One who visits the great exposition put on by these associations, under direct management of R. S. Herrick, who is secretary of the Horticultural Society and business manager of several of the others, cannot but be impressed with the result. Probably no better horticultural show was ever assembled on the American continent than the one held at Des Moines in November.

There was great quantity, excellent quality and surprising variety. The outstanding feature of the show, from end to end of the great Coliseum where it was held, was quality. Fruits, flowers, nuts, vegetables and honey—all were shown on a scale to do credit to a great state and a live organization.

Entries in the beekeeping department are open to the entire United States and Canada. Exhibits came from as far away as Oregon, and a small exhibit from British Columbia was lost somewhere on the way.

Prof. Francis Jager, of Minnesota, judged the honey exhibit and had a big job on his hands. In fact, he was so busy with the judging that he had no time to attend the convention, which was held at the same time.

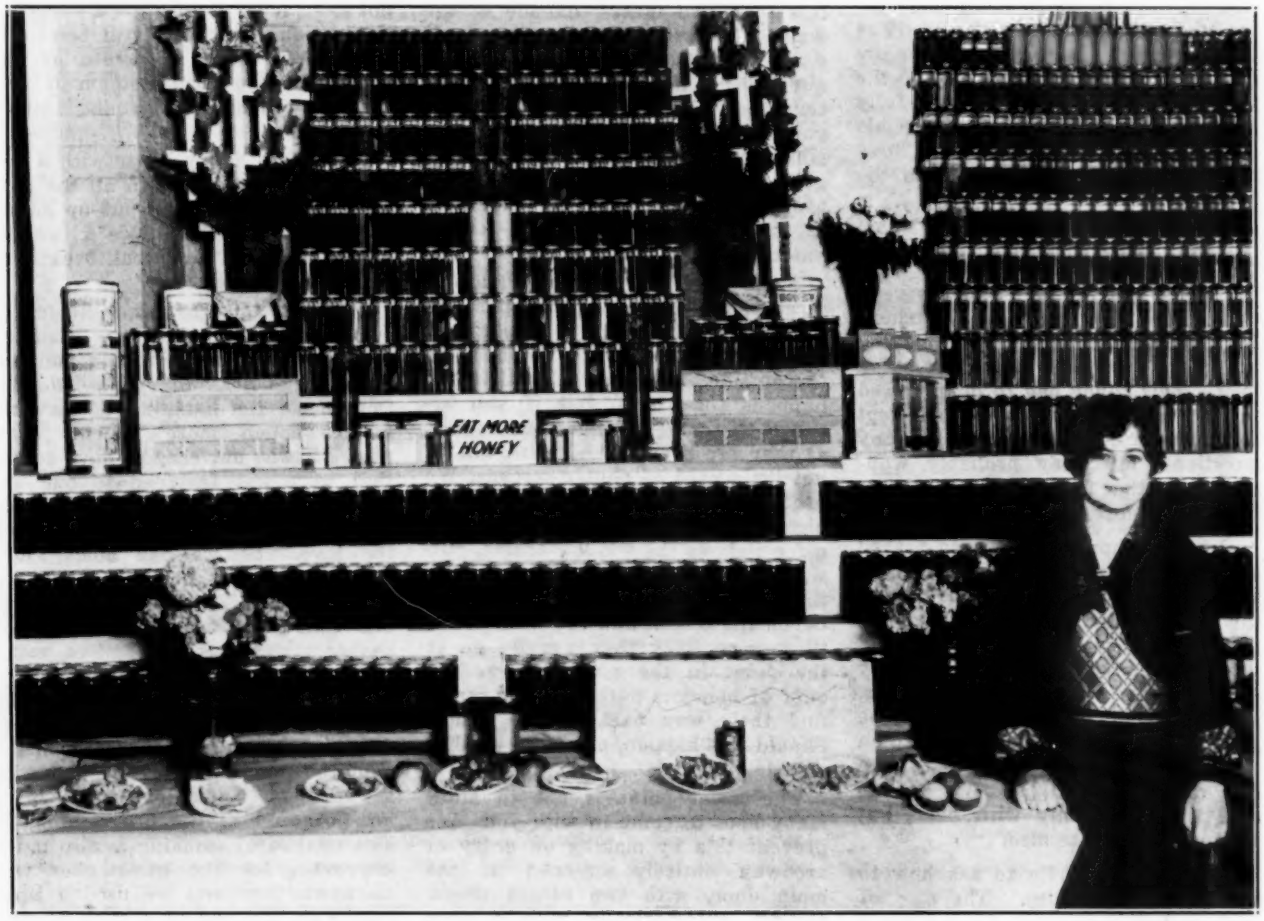
A New Departure

The outstanding feature of the beekeepers' contribution to the show was a daily demonstration of the uses of honey in the home by Miss Malitta Fischer, of Madison, Wisconsin. Miss Fischer is well known because of her honey tea room, in Madison, where she has built a business by serving honey in every possible way. She has learned by costly experience the ways in which honey can be served successfully. She has found what kind of dishes please the customers and the things that do not bring repeat orders.

Each of the organizations affiliated with the exposition held a convention during the show, and each gave a place on the program to Miss Fischer's demonstration. Her demonstration was held in connection with the display at the exposition and attracted much attention.

Probably nothing attempted by the Beekeepers' Association has been so well calculated to interest the general public in the use of honey. Miss Fischer did not recommend the use of honey for everything. She pointed out the ways in which it might be used which will please the user to the point of making her wish to try the same thing again.

So successful was this demonstration that several persons present suggested that Miss Fischer should be engaged by the association to make similar demonstrations at the fairs or other places where large crowds assemble. The results obtained would probably far exceed a similar expenditure in general advertising.



Miss Fischer at her demonstration table, Mid-West Horticultural Exposition

THE BEEKEEPERS' LOOKOUT

"THE HONEYCOMB TREE"

During recent years an ornamental shrub has been widely distributed in American gardens under the name of "butterfly bush." The name is very appropriate, for the plant is extremely attractive to butterflies, which gather on it in large numbers when in bloom.

The scientific name, **Buddleia,** includes several species of closely related plants included in this genus. Several of these are grown in English gardens, which are not subject to such extremes of winter temperature as we of the northern United States must endure. Some of them are very tender and would hardly succeed in this country except in the warmer regions.

The plants are very rich in nectar, and in old English works are described as "Honeycomb Trees." The bloom is luxuriant, as many as fifty flower clusters appearing during the first season, the number increasing in later years. The flowers are about the same color and somewhat similar in appearance as the old-fashioned Persian lilac, once so popular about country homes.

The butterfly bush requires a rich, well drained situation with plenty of sunshine. In the northern states the plant will usually kill back to the ground each winter, but if the roots are protected by a covering of leaves they will survive and a new top will grow the following spring.

When one sees the number of bees, butterflies and other insects that swarm over one of these shrubs when the bloom is at its best, he cannot but wonder how much honey an acre of them would produce. There are few plants which attract such a great variety of insect visitors. If you wish to plant something to attract butterflies and bees, ask your nurseryman for a butterfly bush.

"Does a Bug Think?"

Allen Latham objects to my conclusion that the June-bug leaves the ground to feed at night because the birds are not abroad at that time. (Page 402, August.) His version is as follows:

"Now for the true reason why the June-bug leaves the ground at night. Well knowing that though fairly safe from birds he is considered a tid-bit by Mephitis Mephitica (the skunk), he leaves the ground rather than be crunched and eaten. It is much pleasanter to feed on the sweet leaves of a tree than to be eaten by a skunk, and so the June-bug does not remain buried a few inches to be dug up by the well known nocturnal animal, but leaves the soil at dusk and seeks the tree-tops. There safe for the night, the insect does not return until the lookouts from the upper branches announce that the last skunk has retired; then they all fly to the ground to lie hidden during the heat of the day. Why withhold credit where credit is due?"

Blossoms of butterfly bush

It looks as though Latham has the best of the argument.

More About Garter Snakes

Prof. H. F. Wilson, of the Wisconsin University, writes as follows about why snakes are found under hives:

"An explanation of the reason why common garter snakes are found around bee yards would be appreciated, I am sure. I have collected probably a dozen snakes, found under beehives in the yard. Dissecting the stomachs of these snakes, I found nothing but angleworms, and I feel reasonably sure that snakes do not feed on bees. I believe that they are fond of angleworms, and probably find them more or less abundant under the stands, where the soil is suitable for the angleworms. They probably come to the surface in the darkness and are thus secured by the snakes. Fishermen might be interested to learn that they can find angleworms under the hive-stands at certain times."

A Honey Plant Garden

Here at the Lookout we want to try some of the famous honey plants of other sections. Among the things we would like to plant next spring are Oregon grape, sourwood, wolfberry and Cascara Sagrada. Any of our readers who can assist us to secure small specimens of the above for planting about the first of April will greatly oblige us.

The Athel Tree

The athel tree is an evergreen tamarix **(Tamarix aphylla)** suited to the hot regions of the Southwest where water is supplied by irrigation. It grows very rapidly, sometimes as much as twenty feet in a year. It was introduced into Arizona by Prof. J. J. Thornber in 1909. It was not until 1916, when cuttings were planted at the date garden at Indio, California, that its value was appreciated. Since that time thousands of the trees have been planted in the Imperial Valley and the Coachella Valley, where they are now recognized as the most important windbreak for the hot, irrigated valleys.

The athel tree offers a new and important source of nectar in this region, and as the plantings increase it will become increasingly valuable. Beekeepers living in the country where the tree succeeds will do well to encourage its general planting.

F. C. P.

Bees In North Dakota

The Department of Agriculture and Labor is issuing a pamphlet on Bees in North Dakota. This gives general information on honey production in North Dakota, where that industry has progressed by leaps and bounds the past five years. The pamphlet also contains information calculated to answer innumerable questions coming to the Department on Bees. Address Commissioner of Agriculture, Bismark.

Wisconsin Beekeeping

This little monthly, published for the beekeepers of Wisconsin, is always replete with information. It is beginning its fourth year. All that is needed to receive it is to join the Wisconsin State Beekeepers' Association and send a dollar to its seat of publication, 1532 University avenue, Madison.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

QUESTIONS ABOUT MATING

1. Do you think that one mating serves to fertilize all the eggs that a queen will lay, or do you think they are likely to mate a second time within a year or so after the first mating?

2. Do you think there is any method to control the mating where there are black drones near?

3. I understand that the queens and workers are reared from the same eggs, but I don't see why the queen would not be the same color as her three-band sisters, as the queens are solid yellow to tip.

4. Some claim that the egg that makes the drone is an unfertilized egg. That does not look very reasonable. I don't think that an unfertilized egg would hatch a living being. I think it would be just as reasonable for the unfertilized egg of a bird to hatch a male bird.

5. It is argued by some that the queen lays only one kind of eggs, and the different size of cells and kind of food makes the different bees, but I have failed to get the bees to rear queens from eggs laid in drone comb. TENNESSEE.

Answers.—1. Usually one mating serves to fertilize the queen for life, but occasionally there is a second, a day or two after the first. Some modern observers have claimed that the queen will mate as many as four times, but I believe that they have mistaken her first flights (in which she did not find a mate) for mating flights. Huber, who made hundreds of experiments, asserted, page 32 of my translation, that "a single mating is sufficient to fertilize all the eggs that a queen will lay in the course of two years at least."

We have ourselves made sure that when a queen gets old the remaining eggs that she has in her ovaries are hatched into drones, because the spermatic fluid is exhausted. They never mate after they are three weeks old, and if they do, it does not appear to serve.

2. The only method to get a queen fertilized by drones of your own selection is to put the hive containing the queen and the hive containing the drones in the cellar until 4 o'clock p. m., or until the drones of the other hives have quit flying. Then bring out both hives and give them some warm feed. It excites the bees and causes the queen and drones to come out. This method requires a great deal of exertion and is not always successful.

3. It is a fact that the queen is of slightly different color from the workers, sometimes brighter, sometimes darker, but that is not any more astonishing than the fact that the male birds differ from the female, although their eggs are apparently alike.

4. Although it may not look very reasonable that an unfertilized egg should hatch into a male, it is nevertheless a fact in honeybees. You will find the proof of it in the fact that some worker bees sometimes lay eggs that will hatch into drones, although they do not have any spermatheca at all. This fact, discovered by Dzierzon, is called "parthenogenesis." It exists only in a few insects.

5. Of course, your experiments will reach the same results as ours do. It is out of the question to expect food to change the sex, although a few superficial observers have claimed this. Queens produce eggs that hatch into drones when they lay them in drone cells. Queens that are kept shut in during the first month of their existence lay only eggs that hatch as drones, even when laid in worker cells. We have tested this over and over again.

You should read that Huber book if you wish to get thoroughly posted. Huber did not know of parthenogenesis, but he found the effects of it just the same. I often wished that he and Dzierzon could have lived at the same time, for they would have helped each other in their discoveries.

DRONES IN WINTER COLONY

I have a puzzling question to ask you. I have three colonies of bees, all of the golden Italian type; they are as near all yellow as I ever saw.

One colony has kept a large quantity of drones all winter. They come out and fly on warm days; the bees do not seem to kill them. They have a very fertile queen. I looked at them February 7. They had six combs of brood. This colony did not swarm last year; they harvested 550 pounds of comb honey.

Is it a good idea to leave the drones in this colony? MISSOURI.

Answer.—I have never seen bees keep drones the entire winter, unless they were queenless. But this is evidently a very strong colony and they are probably extra rich in stores. The greatest expense in having drones is in producing them. After they are raised they cost less than the raising of them from the egg. But it would be as well to do away with them unless you wish to breed queens, in which case it would be a fine chance of getting pure matings. Although you are pretty far south in the state, still I do not believe many colonies in your vicinity could show as early drones as these.

SWARMING WITH YOUNG BEES

I started in bees last spring; ordered ten three-frame nuclei. Received them on the fifth day of May, transferred them from cages to ten-frame Langstroth hives with full sheets of wired foundation, giving them two or three sheets along as needed till they built up to full colonies. I also gave them supers for comb honey soon as needed. They made some surplus honey, but swarmed more than some. Nearly all of them swarmed, and so surprised me, as I thought writers claimed that a swarm with a young queen seldom swarmed the first year. I had bought twenty of the ten-frame Langstroth hives and so had room for them. But the experiment caused me to think it might have been better if I had bought larger hives. While there are several ways to control swarming to some extent, yet I dread it more than anything else about beekeeping. And the question I want to ask you is this: Can I use the modified Dadant hive successfully in the production of comb honey? I do not doubt but that it is better for extracted honey, but comb is much more salable with me and I much prefer to produce it. VIRGINIA.

Answer.—We never did use the Dadant hive much for comb honey. It may be used for it, however, by reducing the brood chamber space, at the time of putting on supers, to the number of combs actually occupied with brood. This amounts to the same as Dr. Miller's way of using two eight-frame brood chambers for breeding in early

spring and reducing the colony to one brood chamber with all the best brood combs, at the time of putting on supers.

However, let me make the remark that the production of comb honey and the prevention of swarming work against each other, because it is necessary to crowd the bees into the supers, and this induces them to swarm. The production of extracted honey is more to their liking because it is not in small sections, to which they object, as you may know if you use sections and full length frames side by side in the super.

Your failure to prevent swarming was probably due to a lack of ventilation or to too much heat, produced by leaving the colonies in the sunshine during hot days. If you will read our "Dadant System of Beekeeping" you will see how we managed to prevent swarming with very little trouble. But I must repeat that comb honey production in sections and prevention of swarming do not go well together.

RESTLESSNESS IN BEE CELLAR

Just a little help, if possible. We have a bee cellar that we have wintered bees in for five years and have never had any trouble with them at 45 degrees, and sometimes in cold weather we had a small stove and had to build a small paper fire to bring temperature up to 45. Not so this winter; have had ventilators open all winter, and a good part of the time inside door open, often the outside door, to keep it down even to 50 degrees. Cellar 42x12½x8 feet high, containing 284 colonies, and they look like they were going to swarm. I thought nobody could improve my cellar wintering of bees; now I find out I do not know anything. Remember we have had two and one-half months of steady cold weather; ordinary winters, if it had been this cold, would have had to use fire many times.

We never put bees in cellar as strong as they were last fall. The honeyflow lasted almost till winter, and hives were chuck full of bees. Also, we hauled about 150 colonies in from outyards and put right in cellar. Possibly this caused some of the trouble, but the ones that were carried into cellar, from home yard, seem to be the worst.

On going through the cellar, the cluster of bees on outside of hives seem to be quiet and we can hold light on them several minutes before they seem to stir. Yet there seems to be some bees trying to fly around most all the time. I thought I had ventilation enough—at least it was O. K. for other winters.

Would you advise installing a ventilator fan to cause a freer circulation of air?

If it came warm weather, I don't see how I am going to hold bees in cellar. Any light on the subject you can give me, I will be very thankful for.

SOUTH DAKOTA.

Answer.—There are some causes, usually, for restlessness in cellar:

First. Unhealthy honey, too watery, or loaded with pollen or other substances that load up the abdomen of the bees. In that case the bees that are restless are laden with watery discharges. It is best for those bees to leave the cluster and be lost, for they would ultimately discharge themselves among the other bees and spoil the colony.

Second. Disturbances either by examining them too often or by traveling about, jarring the hives. Sometimes mice give some trouble in that way.

Third. Too much or too little ventilation. In our own experience in cellar it has always proved easier to warm the cellar than to cool it. That is why we ceased cellar wintering, for we have in these parts a good many warm days in a mild winter.

What to do in your case? Unless you can effectively cool the cellar without much disturbance, I would simply leave things as

they are. If the colonies are very strong in bees, you can lose a bushel or two of bees and still find the colonies very strong at the end of winter. We always lost some bees on the cellar floor and yet had good wintering. But it is unpleasant to find them restless. I know how it is, for I have been through the mill. However, if there is no diarrhea, no bees soiling the others, they will stand a large amount of restlessness, with but little loss.

LOSS IN SHIPPING PACKAGE BEES

Some years ago a friend of mine ordered 3,000 packages of bees from the South and after reshipping sustained a loss of 600 packages.

It is claimed that some of the causes of losses are: Indiscriminate handling by express men (causing the starvation of bees through placing the cages upside down etc.,), exposure to sun and draft.

Any advice you can give me which would aid in lessening the risk of loss through shipment would be appreciated.

MANITOBA.

Answer.—The southern breeders are all very desirous of giving entire satisfaction to the northern breeders, for the shipping of packages of bees is likely to continue. So they usually guarantee safe arrival and do their best to hold the express companies responsible for improper handling. Of course the consignee must help them in this, by taking note of any carelessness on the part of the transporting companies. The latter are also desirous of giving satisfaction, since they derive much profit from the transportation costs.

If we understand you correctly, you reshipped the bees after receipt. This, of course, would probably entail further loss, and it is a question whether you could hold the transportation company responsible.

Our advice is for the beekeepers of the North to meet together and exchange ideas and experiences. The men who pack the bees most safely will be the ones who will get the trade. It may be well also for your beekeepers' associations to get in touch with the management of the express company and suggest to them what they can do to make safe delivery more positive.

The shipping of bees from South to North every spring is bound to continue and become very profitable at both ends.

WINTER PROTECTION IN MISSOURI

Could you advise me on wintering bees in my locality? I have never tried packing, but have tried wrapping the hive with tarred paper, but find bees and combs moldy and wet in the spring. How would it do to put burlap sacks on top of the frames and then super of leaves and then the inner cover and metal cover on outside? Do you think that would be of any benefit? What would be your idea of wintering in my location? The temperature very seldom goes to zero. SPRINGFIELD, MO.

Answer.—What you complain of is what causes the greatest trouble in wintering bees in double-wall hives. The bees need considerable ventilation when the colonies are strong.

Your suggestion of absorbents in the upper story is good. That is exactly what we use. Too much air is not good, but there must be a chance for the moisture to pass out. The tar paper is good, but a wide entrance is necessary, or, still better, a lot of absorbents above the bees, without a current of air.

Shelter from cold winds and avoidance of drafts in the hive are the two main requirements. But, above all, you must have good, ripe honey for the bees to consume.

More About Spraying

By Msgr. Alois J. Klein

The practice of spraying fruit trees while in full bloom has caused untold damage to beekeepers. The weakening and destruction of colonies resulting from the poisoning of bees which visit sprayed blossoms injures not only the beekeeper, but also the fruit grower. Since the honeybee is Nature's most effective agent of pollenization, and as such is an important factor in successful fruit raising, horticulturists should avoid spraying at times when bees are at work on blossoms.

Recent investigations have shown that there are certain time limits, namely, three days before blossoms open and again within five days after petals fall, within which periods fruit trees can be sprayed effectively without danger of poisoning bees. Fruit growers are beginning to give serious attention to the planning of spraying schedules, especially since a recent incident in which it was found that spray-poisoned fruit was entering food markets. The Nebraska State Journal, of Lincoln, in its issue of August 29, 1926, reports editorially:

"The danger of arsenic poisoning from sprayed fruits is brought home to Nebraskans by a report from government inspectors at Omaha that fruit bearing traces of arsenic has been shipped into Nebraska and distributed. The inspectors advise that all users of raw fruit carefully cleanse the article before eating. This eliminates all danger, it is said. The menace is said to be greater in a year of drouth than during a normal season. Reports of the confiscation of a carload of arsenic-bearing fruit and of efforts to retrieve a large amount that had been distributed are made in the same statements from inspectors.

Beekeepers would do well to see that the spraying of fruit trees while in full bloom be outlawed at this time, when spraying practices are being revised. Nebraska.

Saskatchewan Bees Do Well

There are 834 registered beekeepers in Saskatchewan, more than half of whom are located east of a line drawn through Regina, north to Last Mountain Lake. Some rather remarkable honey yields have been obtained in the bald prairie districts in and around Swift Current. We charted a map of Saskatchewan, picking out the beekeepers that obtained over 150 pounds of honey per colony, and this did not indicate that one district was particularly more productive than another.

M. P. Tullis.

Meetings and Events

Kansas State Meet

Kansas bee men will gather here February 9 and 10 for a state conference during Farm and Home Week, it has just been announced by Dr. Ralph L. Parker, State Apiarist of the College Entomology Department. The program will consist of addresses by officers of the state association, commercial bee men and faculty members of both Kansas and Iowa State Colleges.

Honey production will be touched on from all angles. Subjects will range from "Winter Activities of Bees and the Principles of Wintering" to "Grading, Packing and Shipping Comb Honey." Special attention will be given to the bee diseases and parasites. The program will be interspersed with talks by Dean L. E. Call and L. E. Willoughby, of the college.

Outside speakers will include Prof. F. B. Paddock, of Ames, Iowa; O. A. Keene, of Topeka, president of the Kansas Beekeepers' Association; C. E. Wagner, prominent beekeeper of Stockdale; J. G. Jessup, of Council Bluffs, Iowa; George Pratt, secretary of the state association; A. P. Sturtevant, bacteriologist in charge of bee disease work for the U. S. D. A.; A. V. Small, president of the Arkansas Valley Beekeepers' Association, and G. D. Mize, Wichita.

Beekeepers' Short Course

A two-weeks beekeepers' short course will be given by the Department of Entomology of Michigan State College, East Lansing, February 7 to 18. While special attention will be given to the needs of beginners, the major problems of commercial beekeepers will receive full attention. Prof. F. B. Paddock, State Apiarist, Ames, Iowa, will assist with the lecturing.

February 17 has been designated as Visitors' Day, and all beekeepers are invited to visit the college on that occasion. A special program for the day has been arranged.

Those interested in the course may write to the Director of Short Courses, Michigan State College, for information.

Death of W. L. Coggshall

The death of W. L. Coggshall, at Groton, N. Y., on December 8, marks the passing of another of our beekeeping leaders. With his brother and later by himself, W. L. Coggshall was one of the earliest and most experienced New York State beekeepers. He was 74 years old at his death. For years he was in partnership with his brother, and later continued in beekeeping by himself.

A Splendid Gift

The Societe d'apiculture du Department des Landes has presented to the Cornell Beekeeping Library a set of the present eight volumes, bound in half leather, of Gaston Bonnier's Flore complete de France, Suisse et Belgique. This is sent by the society to be placed as a memorial to Langstroth.

The books are sent through the president of the society, M. C. Granel, Lesperon, Landes. He is a manufacturing chemist and is now devoting most of his time to his bees.

Indiana Short Course

The annual beekeepers' short course in Indiana will be held at Purdue University, Lafayette, Ind., February 21 to 24, inclusive, and anyone interested can obtain a copy of the program by addressing the Department of Entomology, Purdue University, Lafayette, Ind.

Among the speakers who will be there are included Prof. R. H. Kelty of Michigan, Mr. George S. Demuth of "Gleanings in Bee Culture," and Mr. Jay Smith, the well known queen breeder. Out of state beekeepers are welcome.

Missouri Meeting

The Missouri State Beekeepers' Association had a fine two-day meeting at Aurora, Mo., October 29 and 30. Everyone present was enthusiastic for registration of apiaries. The newly elected officers are:

President, A. B. King, Mt. Vernon, Mo.

First Vice-President, C. Woods, Brashear, Mo.

Second Vice-President, William Orr, Craig, Mo.

Secretary, Clay T. Davis, Cameron, Mo.

Treasurer, Otis A. Griffith, Verona, Mo.

Adviser, Dr. Charles Sandy, Kansas City, Mo.

Correspondence Courses for Northwest Farmers

This titles a twelve-page booklet sent from the North Dakota Agricultural College, at Fargo. On one page we read: "Instruction in beekeeping is designed to meet conditions in North Dakota and is intended particularly for the beginner, including such subjects as: Making a start with bees, swarming control, management for the honeyflow, and wintering. Twelve lessons. Professor Munro."

This is good. There are sixteen other courses also, including poultry, fruits, dairying, sheep, swine, beef, grains, and farm management.

Crop and Market Report

Compiled by M. G. Dadant

IMPROVEMENT IN MARKET CONDITIONS

As a general thing, there is no indication of a great improvement in marketing conditions for honey. However, the improvement is marked in some localities. For instance, in the New England states there seems to be considerable improvement, and this is especially to be remarked in the southeastern states. The Canadian provinces have seen a continued stiff demand. In western sections there is possibly a little better demand for honey in large lots, although perhaps the price has not appreciably strengthened.

HONEY ON HANDS

In the New England states there will be no difficulty in disposing of all the honey left. In fact, there is hardly any left at this time, and beekeepers are importing from other states to keep the demand supplied. This also rules good for the southeastern states, especially those having a large tourist population, where quite a lot of honey is coming in from other sections to supply the demand.

There is probably not over 25 per cent of honey left on hand in all states east of the Mississippi River, and many of these states are pretty well cleaned up. Some of them which seem to be the exception are possibly Michigan, Wisconsin, and isolated producers, of course, in other states.

When we get in the plateau region we find a little more honey on hand, the percentage probably being in the neighborhood of 30 per cent. Nebraska is reporting a balance of 15 per cent on hand, while North Dakota and Minnesota show amount of 30 per cent on hand.

In the intermountain territory the percentage will run up somewhat, Colorado reporting in the neighborhood of 40 per cent, Arizona 30 per cent, New Mexico 40 per cent, and Montana as high as 50 per cent left on hand. From this section west the percentage runs down, most especially noticeable in California, where the amount left on hand is now negligible, probably not over 10 per cent of the entire crop.

WILL ALL HONEY MOVE?

There does not seem to be any difficulty generally with getting rid of all honey before the new crop comes in. There will naturally be a large number of producers who will hold over some little quantity of honey, but as a general rule the crop appears to be going to move before the new crop is ready for the market. The only question is whether or not the producers will be satisfied with the prices they are going to be able to get. In the intermountain territory, offers are circulating rather generally, prices of white extracted honey ranging from 7 to 7½ cents per pound. Naturally, the producers out there cannot figure that this is much more than cost production, and are holding for better prices.

BEES WINTERING

As a general rule, bees are wintering in good condition so far. There has been a rather extensive long period of cold weather in the northern states, which has not allowed the bees to get the usual flights during the winter, so that out-of-door wintered bees are apt to suffer unless there is a change soon, and the bees get flight. This extends down probably to central Illinois, all points below this having had some nice days and flights, which have helped considerably.

The long spell, of course, may have a tendency also to run the bees short of stores, which was one of the questions late last fall. In the southeastern states, bees are wintering excellently and coming out in very fine shape. Texas reports normal, as do Arizona and New Mexico, and California the same. In the inter-mountain and plateau states the bees are dormant, with no idea of what condition they will come out in, although there has been a long cold spell without any relief for out-of-door wintered bees.

PROSPECTS

As has been stated before in these columns during the past few months, the prospect for clovers throughout the entire white clover region is especially good. Combined with the early prospects there have been heavy snows in practically all of these areas, which, so far, assure the clover of coming through winter in good condition and with plenty of moisture for spring growth. The southeast states report also plenty of moisture and honey plant growth in good condition, with the exception of Virginia and some of the seaboard states, which are yet dry. In the plateau and intermountain region there have been heavy snows. For the first time in several years, the irrigated sections now apparently will not suffer from lack of moisture during the coming year, because of the excessive snows in the mountains. California has had an abundance of moisture also, although the weather is cool and backward so far. This, however, should have no bearing on the honey crop if conditions change early enough.

Honey crop conditions in the Canadian provinces are excellent. There was a large carryover of honey from last year in Ontario especially, but the short crop there has more than made up for this and honey prices are stiffening from one-half to one cent per pound, especially in the western provinces, where all large lots of honey have been disposed of. The western provinces are this year looking forward to considerable increase.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

BEES AND QUEENS

PACKAGE BEES—Three-banded Italians. Two-pound package bees with untested queen, $3.75; five or more, $3.50. Queens, $1.00 each, $10.00 per dozen. No disease.
C. G. Ellison, Belton, S. C.

GOLDEN UNTESTED QUEENS—Gentle and good honey gatherers as can be found; $2.00 each. Tested, $4.00 each. Best breeders, $20.00. Over thirty years a Golden Italian breeder.
J. B. Brockwell, Barnetts, Va.

PACKAGE BEES AND QUEENS—Three-banded, leather-colored Italians. By booking with me you will not be disappointed next spring. Been shipping bees and queens all over the North and for many, many years, with perfect success and satisfaction. Health certificate with all shipments.
Jasper Knight, Hayneville, Ala.

THOUSANDS of pounds of bees and queens ready for shipment early in April. It will pay you to get our prices before buying.
Overbey Apiaries, Leonville, La.

BOOKING for spring 1927 my light Italian bees and queens. Two-pound packages with queen, one to ten, $4.00; each additional pound $1.00. Liberal discount on quantity shipped on frame of honey built from Dadant foundation Hoffman frame. Satisfaction guaranteed, health certificate attached. Twenty per cent books your order. Circulars sent. Address
J. L. Gaspard, Hessmer, La.

SELECT TESTED QUEENS of last fall rearing. Mothers produced as much as 600 pounds of surplus honey in one season. Delivery commences April 1; $1.25 each as long as supply lasts. See large display ad elsewhere in Journal. Our 1927 circular and price list is **now ready.**
M. C. Berry & Co., Box 697,
Montgomery, Ala.

OUR BUSINESS IS BEES—See our ad on page 101. Frank & St. John, Ripon, Calif.

LET me know your wants and quote you on your bee and queen requirements for 1927. Circular gladly sent on request.
R. V. Stearns, Brady, Texas.

HIGHEST grade Italian queens—Tested, $1.50; untested, 75 cents. Package bees, one pound, $1.50; two pounds, $2.50; three pounds, $3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed.
T. L. Davis, Buffalo, Leon Co., Texas.

FOR SALE—Two-pound package Italian bees with queen, $3.50; three-pound package, $4.00. Discount on 25 packages or more. Inspection certificate with each shipment. Book your order early to avoid delay. Write me. J. L. Leath, Corinth, Miss.

STOP—See my display ad, page 39, January issue, before buying elsewhere. Write. I have what you want and when you want it.
Cloverland Apiary, Hamburg, La.

FOR WEAVERS' young queens and honey-gatherers, see page 89.

PACKAGE BEES—Pettit's quality. Personally shipped from Georgia. Canadian or American money.
Morley Pettit, Georgetown, Ontario.

TRY OUR BEES AND QUEENS — $ The most for your $. Ten to twenty-five 2-lb. package, $2.00 each; one to ten 2-lb. package, $2.50 each. Queens $1.00 extra. Queens, the best light Italians, at 75c each for (50) fifty or more on orders booked by April 1. Safe arrival at your delivery station guaranteed, and you must be satisfied before our dealings are complete. Our queens are personally raised and are of the best. Give them a trial.
Salida Apiaries,
T. L. Nicolaysen, Prop.,
Salida, Calif.

FOR SALE—Two-pound package Italian bees with select untested queen $3.00. All bees shipped with health certificate attached. The Mangham Apiaries Co.,
C. S. Duncan, Prop.,
Mangham, La.

DAY BY DAY—In every way Carniolans are winning. Carefully reared, expertly bred. Prices right. Commencing April 1.
C. H. Smith, Marianna, Fla.

GOLDEN ITALIAN QUEENS—One queen, $1.00; six, $5.00; one hundred, $75.00. Pound packages on request. They are gentle and they get the honey. Try them and be convinced.
Sam Foley, Greenville, Ala.

1927 PACKAGE BEES—Italian bees and queens. Two pounds, $3.50; three pounds, $4.50. Prompt service and satisfaction guaranteed. Certificate.
Louisiana Southern Bee Farm,
Baton Rouge, La.

LET us book your order now for packages and queens for spring delivery. Order early and avoid delay and disappointment. Safe arrival and satisfaction guaranteed. Health certificate with each shipment. Write for circular and price list.
J. M. Cutts & Sons,
R. 1, Montgomery, Ala.

PACKAGE bees, nuclei and queens. We solicit your patronage on the merits of our quality, service and price.
Crenshaw County Apiaries, Rutledge, Ala.

PACKAGE bees 90c per pound in 10 two-pound package lots. Peterman's select Italian queens: 1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00; 100, $75.00. Delivery starting April 1, 1927. Safe delivery and entire satisfaction guaranteed.
H. Peterman, Lathrop, Calif.

FOR SALE—Package baby bees and Italian queens. Write for prices and discount on January orders.
Benson & Walton Bee Line,
612 Hill St., Galena, Ill.

GOLDEN Italian queens and nuclei (or package bees) for 1927; the big, bright, hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, $1.00 each; 6, $5.00; 12, $10.00; 100, $75.00. Tested, $2.00 each. Two-frame nuclei or two-pound package with queen, $4.50 each; ten or more, $4.00 each. Safe arrival guaranteed. Health certificate furnished.
E. F. Day, Honoraville, Ala.

BOOKING orders for spring delivery. I have one of the best packages offered: two frames with brood and honey, two pounds bees, and one untested queen introduced. One to four packages, $6.00; over five packages, $5.00, f. o. b. here. Hoffman frames, some built on Dadant wired foundation. Twenty per cent books order. All bees shipped with health certificate.
L. J. Bond, Big Bend, La.

BRIGHT Italian bees and golden queens. Past season we shipped packages into 32 states and queens to three foreign countries. Have never had a dissatisfied customer. Have received many reports as "Finest lot of bees have ever received." "Bees are better than I expected." Write for prices; they're reasonable. Season begins April 10. Bees shipped from New Orleans.
M. Stevenson, Westwego, La.

"SHE-SUITS-ME" QUEENS—Three-banded stock. None better. Untested queens from May 15 to June 15, $2.00; after June 15, $1.50. Introduction guaranteed.
Allen Latham, Norwichtown, Conn.

PACKAGE BEES—April and May delivery. Write for prices. Our stock will please you. The Crowville Apiaries,
J. J. Scott, Prop., Crowville, La.

TOWNSEND & CAMOS, Lorenauville, La., successors to J. P. H. Shaw & Co., offer some of this world's famous strain of bees in packages for next spring delivery. Absolutely pure three-banded stock. Say how many you can use and we will be pleased to quote a very low price, considering quality of stock.

AM BOOKING orders 1927 delivery for our famous grey Caucasian queens and golden Italians, reared in separate yards. Every precaution taken for pure mating. Caucasian breeders are daughters of 1926 imported mothers. Pure mating, safe arrival guaranteed in U. S. A. and Canada. Write for prices and circular.
Tillery Bros., Greenville, Ala., R. 6.

BEES AND QUEENS—Best and cheapest. Write for large catalogue.
The Stover Apiaries,
Tibbee Station, Miss.

LEATHER COLORED ITALIAN QUEENS—$2.00; after June 1, $1.00. Tested, $2.00.
A. W. Yates,
15 Chapman St., Hartford, Conn.

THRIFTY Caucasian bees and queens for 1927. Packages or nucleus headed with daughters from our direct imported or our own select breeders. Let us figure with you on your needs.
Bolling Bee Co., Bolling, Ala.

FOR SALE—Italian bees and queens: 2-lb. packages of bees with queens, $3.50 each; 1-lb. package with queens, $2.50. Queens bred with the greatest of care.
O. P. Hendrix, West Point, Miss.

EARLY package bees and highest grade Italian queens. Our only business is Bees and Queens. We do not produce honey, deal in supplies or sell off a few old bees in the spring as a side line. Our colonies are worked exclusively for the production of young, vigorous, healthy worker bees for packages. Colonies are drawn on about every two weeks from March 20 to June 20. Two- and three-pound packages. Fifty pounds or more $1.00 per pound. Select three-band Italian queens $1.00 each. Ten per cent deposit will book order and reserve shipping date. Large orders booked in advance will receive special prices. We guarantee both safe arrival and satisfaction.
J. E. Wing, Cottonwood, Calif.
Most Northern Breeder in California.

BEES AND QUEENS—For spring delivery. Prompt delivery and satisfaction guaranteed. Three-band Italian queens and good young bees. One 2-lb. package of bees and untested queen, $3.50; twenty-five 2-lb. packages of bees and untested queen, $3.25 each; one 3-lb. package of bees and untested queen, $4.50; twenty-five 3-lb. packages of bees and untested queen, $4.25 each. Liberal discount on early orders.
W. H. Moses, Lane City, Texas.

BOOKING FOR MAY DELIVERY 1927—Try Dalton's introduced, laying-enroute to you queens in packages. Save the risk of introducing her, gain the days it takes for her to get to laying and make you brood to emerge into bees. Two frames of honey brood and bees, well covered, two additional pounds shaken in, a good young Italian queen on those combs laying before she starts to you. Price f. o. b. Bordelonville, $6.00 per single package; 20 per cent cash books your order. Frames, Standard Hoffman, largely built on Dadant's Wired Foundation; bees and queens, light Italians, called Goldens. Health certificates on every package. Remember that last season I rejected more orders after filling to capacity than I accepted. Satisfied customers for reference in most states.
Jes Dalton, Moreauville, La.

EAT KELLOGG'S CEREALS BECAUSE HE IS BOOSTING HONEY.